HOAXES, MYTHS & MANIAS CONFERENCE • CREATIONIST FRAUD • STIGMATA CLAIMS

Skeptical Inquirer

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Science & Religion 2004: Turmoil and Tensions

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Susan HAACK
Paul KURTZ
Walter ISAACSON
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James KENNEDY
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Published by the Committee for the Scientific Investigation of Claims of the Paranormal

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of Claims of the Paranormal

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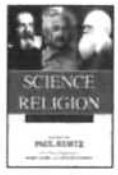


On the cover . . .

From left to right, starting from the top: Isaac Asimov, Carl Sagan, Neil deGrasse Tyson, Francis Crick, Charles Darwin, Albert Einstein, Marie Curie, Edmund Halley, Galileo, and Sir Isaac Newton

EDITOR'S NOTE

Science & Religion 2004: Turmoil and Tensions

The articles, columns, and reviews in this special, expanded issue are devoted to "Science and Religion: Turmoil and Tensions." This is the third special Science & Religion issue of SI. The first two (July/August 1999 and September/October 2001) proved provocative and popular with readers. Both are still available as back issues. Many of those articles are also collected (along with ones from other venues) in the book *Science and Religion: Are They Compatible?*, edited by Paul Kurtz (Prometheus 2003).

Because we try to take a scientific, empirical approach to all the issues we address, the articles selected for this issue go well beyond opinion and commentary to provide new data, where available, and frequently, deep, instructive insights.

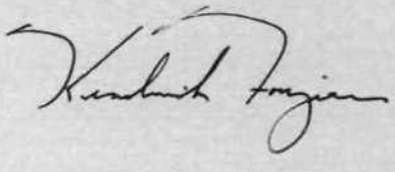
I think the lead article, by Pascal Boyer, a professor at Washington University, St. Louis, and author of *Religion Explained: The Evolutionary Origins of Religious Thought*, may prove the most surprising for many skeptics. In "Why Is Religion Natural?," Boyer draws on recent findings in psychology, anthropology, and neuroscience to directly address misconceptions skeptics often hold in trying to explain the appeal of religion. Boyer finds that the human sensitivity to religion is a byproduct of the way human minds operate in ordinary, non-religious contexts. That's why religious systems are so widespread and common, even in disparate cultures. "It may seem," he concludes, "prudent and empirically justified to say that religion is a very probable byproduct of various brain systems that are the result of evolution by natural selection."

The subsequent articles are likewise by esteemed scholars and writers, most authors of books on these very topics, each with his or her own viewpoints, approaches, and insights. They include two philosophers, a physicist, an anthropologist, a science educator, and a sociologist. As with our previous two Science & Religion issues, don't look for consensus or unanimity of thought. Do look for good, scientifically valid information and fresh insights, all applied to an area—science and religion—where these two great manifestations of human culture remain in near-perpetual tension and conflict.

* * *

I was at the Jet Propulsion Laboratory in Pasadena on July 20, 1976, when Viking 1 landed on Mars and transmitted the first ever images from the martian surface. Late Saturday night, January 3, 2004, via CNN, I was able to watch live from the comfort of my home as the scientists at JPL got the word that the Mars rover Spirit had landed successfully on Mars and was transmitting data. Remarkably detailed photos of the landing site soon followed.

As I did with the Viking scientists in 1976, I shared in the excitement of the Mars rover scientists. How often does a worldwide TV audience get to see mature scientists jumping up and down in relief and jubilation? The scene was repeated Jan. 24 when Spirit's twin, Opportunity, bounced to its successful landing on Mars, helping offset concerns about communications problems with Spirit. Rare moments and events like these, where the very human side of science can be seen and shared with the public in real time, have the capacity for inspiring people. Usually scientific discovery is a more private, solitary matter. But these magnificent occasions really can make us realize that exploration is a fundamental human impulse, a positive aspect of our culture that can, at times, be shared by all.



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In Praise of Ray Hyman

JAMES ALCOCK

The following remarks about Ray Hyman were delivered by York University psychology professor and CSICOP Executive Council member James Alcock in presenting Hyman the In Praise of Reason Award, CSICOP's highest honor, at the Saturday night awards banquet at the CSICOP Albuquerque conference "Hoaxes, Myths, and Manias" Oct. 23–26, 2003.

Imagine, if you will, the following scenario—admittedly an unlikely one.

• A new super-psychic has burst onto the world stage. He has amazing powers that go far beyond mere "cutlery distortion" and telling people things about themselves that they already know.

• This is a psychic whose powers apparently have already been tested in scientific experiments that produced highly statistically significant results.

• This is a psychic who has already personally entertained many of the world's leaders, and impressed them with his powers.

Well, so far, this is not that different from what we have seen before perhaps, but now, suppose the following:

• This psychic has offered to use his powers to negotiate a lasting peace amongst warring factions in the Middle East, in Afghanistan, in Iraq and in Kashmir. He has told members of the United Nations Security Council, who gave him a private audience, that by being able to read the minds of the leaders of the protagonists in the various conflicts, he will bring about better communication and better understanding of issues. He might even resort to altering the mindsets of recalcitrant leaders by means of psychokinesis, turning them into peace-seekers and compromisers. The members of the Security Council have become so convinced of his powers that they are about to name him Ambassador-At-Large and Chief Negotiator for World Peace.

The Committee for the Scientific Investigation of Claims of the Paranormal is not amused by this news.

CSICOP and its supporters protest loudly, and finally we are informed by the Security Council that we may send an emissary—one person only—who will be allowed to evaluate the supporting research and to test the psychic directly, and then present his or her findings and conclusions directly to that world body.

Well, this is pretty important stuff—much more important than the usual CSICOP work. After all, if, as we suspect, this man is a phony, there is the likelihood of tremendous harm being done to the cause of world peace if he is allowed to mess about in these seemingly intractable conflicts.

Let's not quibble about the likelihood of such a scenario, but let's focus instead on what qualities we would want our emissary to possess in such a case. I've made a list:

Ray Hyman has made truly outstanding contributions to the promotion of science and the defense of reason.

1. Since scientific evidence has been adduced to support claims of the psychic's powers, our emissary should be a scientist, preferably a social scientist, someone who knows how to conduct and evaluate research involving human subjects; someone who knows how to detect flaws and biases in such experiments.
2. We need an expert in statistics, since statistical analysis was part of the scientific support offered for the psychic's powers.
3. We need an expert in the psychology of belief and deception, someone who knows all about how people can both deceive and be deceived.
4. We need someone with sound academic credentials, for credibility is going to be a very important if our emissary is to have an influence on the Security Council.
5. We need someone with expert

knowledge of magic and mentalism, for if the psychic is using the magician/mentalist's craft, only someone experienced and knowledgeable in this craft will be able to detect this. As the saying goes, *it takes a thief to catch a thief.*

6. We need someone who is experienced in evaluating supposed psychics and the research adduced in their support. Without such experience, even a very good social scientist may overlook important sources of error and bias.
7. We need someone who has a track record for fairness, someone who has gained the respect of skeptics and believers alike, so that our emissary will not be seen as some sort of hit man for CSICOP and skepticism.
8. We need a good communicator. It is not enough just to be able to show that the psychic is not really psychic at all. We need someone who can cogently present the skeptical case in such a way as to have an impact on the members of the Security Council.
9. We need someone who does not antagonize others, someone whose personality and charm will ease the sting of whatever critical commentary he or she has to offer to the Security Council.

Well, that's quite a list, and one that is almost impossible to fill, one might think.

I know of only one person in the entire world—and believe me, I am not exaggerating here; I really mean it—who measures up to all these criteria. And he is in our midst tonight.

Let me tell you about Ray Hyman:

• Ray earned his Ph.D. at Harvard University, where he then taught statistics, amongst other subjects. He is now Professor Emeritus of Psychology at the University of Oregon, where he taught for many years.

• He is an expert in cognitive psychology.

• He is an expert in statistical analysis.

• He is an expert in research design as applied to the study of human subjects.

• He is an expert in the study of deception and self-deception and has dedicated most of his professional career to the study of why people come to believe strange things, how they can be fooled, and how some people set out to fool them.

• He has published books, book chapters, and over 200 articles that critically evaluate studies of the paranormal and related domains. His article on cold reading, so Paul Kurtz informs me, has generated more requests for reprints than any other article in the history of the SKEPTICAL INQUIRER.

James Alcock (right) presents the "In Praise of Reason" award to Ray Hyman.

• He is an expert in magic and mentalism. Few people outside of magic circles are aware of just how accomplished he is as a magician/mentalist. Indeed, he started out by earning his living as a mentalist. He is also an accomplished inventor of magical effects and routines. He is highly respected by other magicians, and has had the rare honor of twice appearing on the cover of the *Linking Ring*, the monthly magazine of the International Brotherhood of Magicians.

• He has a long and unparalleled history of investigating psychics. Some of this work has been for official agencies such as the United States Defense Department and the United States National Research Council. He knows personally all of the leading, and many of the not-so-leading, parapsychologists in the world, and is respected by virtually all of them.

• He is, of course, a champion among skeptics, and one of the founders of CSICOP.

• He is known above all for being fair-minded—so much so that on more than one occasion I have been approached by people at CSICOP conferences who have complained that he had gone soft on parapsychology. They believed that he had "gone soft" because, rather than taking a debunking stance as they had wanted, he had approached the topic of paranormal claims from the point of view of scientific objectivity.

• In terms of personality, Ray is able to be highly critical of parapsychologists and psychics without antagonizing them. Indeed, no doubt every one of us who has talked with Ray knows of his warmth and charm, and knows as well that no matter how stupid or ill-informed our questions might be—and I've asked my share—he never makes us feel foolish for having asked. He is always patient in his explanations and never condescending.

Ray Hyman clearly meets all the criteria in my list. I can think of no other individual in the entire world who could do the same.

The In Praise of Reason Award is CSICOP's highest honor, and is given to those rare individuals who have made truly outstanding contributions to the promotion of science and the defense of reason. Previous recipients include such stellar scientists and communicators as Carl Sagan, Stephen Jay Gould, Nobel laureate Murray Gell-Mann, and our own outstanding editor, Ken Frazier.

Tonight, I take great personal pride in being able to present, on behalf of CSICOP, the In Praise of Reason Award to my friend and colleague Ray Hyman, from whom I—and I am sure all of us—continue to learn so much.

Congratulations, Ray. □

From Internet Scams to Urban Legends, Planet (hoa)X to the Bible Code

CSICOP Albuquerque Conference Has Fun Exposing Hoaxes, Myths and Manias

KENDRICK FRAZIER

The Committee for the Scientific Investigation of Claims of the Paranormal (CSICOP) came for the first time to the American Southwest with its conference "Hoaxes, Myths and Manias" Nov. 23–26 in Albuquerque, New Mexico.

The region has a rich scientific heritage going back to Robert Goddard's rocket experiments near Roswell in the early 1930s, the birth of the nuclear age here in the 1940s, two world-famous national laboratories pushing the frontiers of applied science and technology, new astronomical observatories sprouting up on mountain peaks, and a Ph.D. per-capita ratio greater than any other state. It also, ironically, has always attracted more than its share of New Agers, mystics, and seekers, and of course it is home to that most famous of all modern myths and associated hoaxes, the Roswell crashed flying saucer story.

The conference was a lively affair with sessions spread over four days, Thursday evening to Sunday noon. Happily this time none were concurrent, so the nearly 300 registrants didn't have to miss anything. It was preceded by a limited-attendance windshield tour of Sandia National Laboratories on the southeast edge of Albuquerque and followed by a nine-hour, two-bus tour to the southeastern part of the state to Roswell and its weird little UFO museum. Lots of out-of-state attendees took extra time to explore New Mexico's natural history and cultural attractions.

One of the things that seemed to mark this conference was a nice mixture of near-legendary figures who founded the modern skeptical movement in the 1970s (Paul Kurtz, Ray Hyman, and at least six other CSICOP Fellows spoke) and a newer generation of skeptical inquirers who are advancing the cause of scientific skepticism in their own ways on Web sites, Web publications, and so on. It was an opportunity for them all to meet and hear each other. Everyone seemed to have a lot of fun—both at the conference and in their work/hobbies of exposing various scams, shams, deceits, deceptions, misconceptions, and other manner of skullduggery.

Two noted psychologists and CSICOP Fellows started things off with presentations designed to help people understand some of the general principles underlying specific cases they'd be hearing later from others. Barry Beyerstein (Simon Fraser University) presented a useful tutorial on, essentially, the psychology of belief, with abundant references to the Belief Engine model of CSICOP colleague and fellow psychologist James Alcock (SI May/June 1995). Then Ray Hyman (University of Oregon, emeritus), who later in the conference would be given CSICOP's In Praise of Reason Award (see page 5) described the psychology of the con, which included some demonstrations of how easily we can all be deceived. Con men (and women) all have a good practical knowledge of human psychology, and they prey on the human trust that make societies function. Successful con artists charm potential victims with their immense likability, and they combine that with an utter lack of compassion for their victims. They also often work in teams with one person posing as an innocent customer to help draw the victim in.

Alex Boese (author of *The Museum of Hoaxes* and creator of the Web site museumofhoaxes.com) began the first full day of sessions with a presentation perhaps prototypical of those at the conference: an amusing treatment of Internet and media hoaxes. He called the Internet "the greatest medium for hoaxes of all time." Some hoaxers use e-mail, some use the Web. E-mail hoaxes

Kendrick Frazier is editor of the SKEPTICAL INQUIRER *and a member of the CSICOP Executive Council.*

spread rapidly in viral fashion; some are outrageous and amusing, others have broad consequences.

Boese clearly seems to enjoy good hoaxes; he complained that annoying e-mail hoaxes "give the phenomenon of hoaxes a bad name." Other kinds he finds "more interesting." These include fake press release hoaxes. Examples: Microsoft is buying the Catholic Church and has bought exclusive rights to the Bible, *1994*; the false report originated by a humor Web site that of all the presidents, George W. Bush's IQ is the lowest at 92 (*The Guardian* published it as fact on July 21, 2001, and Gary Trudeau used it in his Doonesbury comic strip); and Alabama changes the value of pi from 3.14 to "the biblical value of 3.0," an April Fool's hoax that originated with New Mexicans for Science and Reason, the local host of this conference, as a parody of creationist attempts to block evolution).

There are hoax photographs, including Cordell's cat, a photo of a digitally enlarged 23-pound cat that quickly went out to millions of people worldwide, and the humorous photo of a shark leaping at a helicopter, a splice of two digital images. Another category is hoax political humor photos (President Bush with a book upside down, Representative Tom Daschle pledging allegiance with his left hand over his heart). Still another is "dark humor in the wake of disastrous tragedy," like the hoaxed photo of a tourist on the World Trade Center observation deck as one of the hijacked airliners of September 11, 2001, flew toward him. It was the wrong kind of plane.

Web hoaxes are a little more difficult, Boese said, since spoofing the look of real Web sites "takes some work." Nevertheless there are hundreds of hoax Web sites; among the most infamous was Bonsaikitten.com, which showed uniquely shaped bonsai kittens, grown in jars, a hoax created by grad students at MIT. Another was the hoax auction on eBay of the "ghost in a jar." Someone paid $50,000 for the jar, and there were ghost-in-a-jar fan clubs.

Why are there so many Internet hoaxes? Unlike other media, says Boese, the Internet "has almost no barriers to entry. There are no gatekeepers or editors." In that sense, he said, "The Net has democratized the phenomenon of hoaxes." The Net is a haven for hoaxes and misinformation, he said, one that "tends to be the price we pay for an open society." Hoaxes and lies are part of the messiness of an open society and, in any event, said Boese, "frivolous hoaxes are not much of a problem."

Jan Harold Brunvand, who received CSICOP's Distinguished Skeptic Award, and Ray Hyman, recipient of the In Praise of Reason Award, compare notes and plaques after the Saturday evening awards banquet (see James Alcock's remarks about Hyman on page 5).

Probably the largest group of skeptics ever to visit Roswell gather in front of the Roswell UFO Museum. Two bus loads from the CSICOP Albuquerque conference went to Roswell Oct. 26, the Sunday the conference ended, hosted by Dave Thomas and James McGaha. Photo courtesy James McGaha.

Robert Carroll, a professor of philosophy at Sacramento City College and author/creator of *The Skeptic's Dictionary* (based on his lively Web site skepdic.com), is another example of a speaker who has found a major role using the new media to offer reliable information about claims. He spoke on pranks, frauds, and hoaxes from around the world. There are plenty to choose from. His examples ranged from the Indian rope trick of 1890 to the herbal fuel hoax of 1996. And we've had two human cloning hoaxes twenty-five years apart, David Rorvik's in 1978 and the Raelians' this past year.

Carroll offered several valuable lessons including: "Don't trust people you trust" and "Don't expect any help from the mass media" (with some exceptions). Another is that almost anyone can be hoaxed. "It's pretty easy to hoax people," he said. "We want to be deceived."

Eugenie Scott, executive director of the National Center for Science Education (ncseweb.com), gave a special luncheon address about hoaxes of evolution. Creationist critics of evolution often attempt to denigrate science by pointing out various paleontological hoaxes such as Piltdown Man. But, said, Scott, hoaxes within science are quickly corrected—that's how science works.

One example she gave of science's screening mechanisms working was a case that happened a few years back (1999–2000) of *Archaeoraptor*, the "Piltdown" bird from China. The paper touting it was rejected by *Nature*—the history of the fossil "was a little suspect," Scott points out. But the National Geographic Society prematurely heralded it, then had to recant. The fossil turned out to be a composite of the body of a bird with the tail of a dinosaur. "It was definitely a fake," although not necessarily a fraud, Scott said.

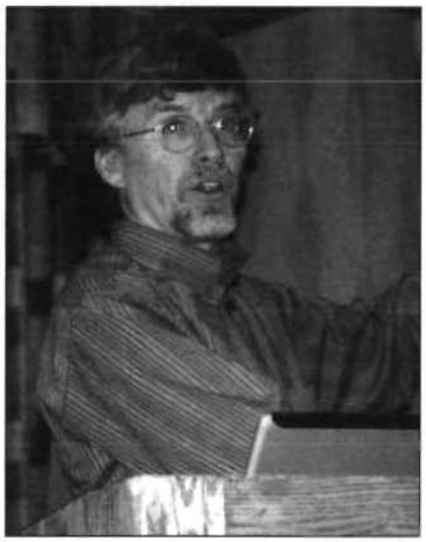
In any event, she said, none of this affects the general point that transition fossils are abundant. "We have a wonderful series of fossils from dinosaurs to birds." She also debunked the claim of creationist writer Jonathan Wells in *Icons of Evolution* that the famous peppered moth example used in many evolution texts is a fraud. She ended with a pitch for scientists to become more involved in science education issues in their fields.

Urban legends guru Jan Harold Brunvand (University of Utah) was the conference's keynote speaker (and recipient the next night of CSICOP's 2003 Distinguished Skeptic Award), and he offered a retinue of urban legends like those he has collected in a series of lively books. "Why do some people believe some of these weird stories some of the time?" he asked. Well, because many appear as news items in legitimate newspapers, the stories often refer to particular police authorities, and they often give specific details (Brunvand calls these "reality anchors"). Also they appeal to us because they often depict "sweet revenge or poetic justice," and some actually offer good advice. "Urban legends depict the world as we imagine it," said Brunvand. He concluded with a one-sentence summation that is the title of one of his books: The truth never stands in the way of a good story.

Eric Krieg, an electrical engineer and president of the Philadelphia Association for Critical Thinking, is an example of an energetic skeptic who has carved out a niche for himself, in his case investigating claims of the promise of free energy. Here he encounters all manner of dreamers, schemers, and conspiracy theorists. "Some of these people are insane," he said. Others are just honestly deluded. Still others, he said, know exactly what they're doing. These are con men. At least one (Dennis Lee) has been convicted of seven counts of fraud. "They're like modern snake-oil salesmen," he said. (See Krieg, "Examining the Amazing Free-Energy Claims of Dennis Lee," *SI* July/August 1997.)

Krieg offers a Randi-style $10,000 bounty for any demonstration of a free-energy device under test conditions. Promoters have given him a host of excuses for not subjecting their ideas to his tests: "It needs a few more adjustments," "I'm worried it will collapse the

Eugenie Scott


Eric Krieg

Kenneth Feder

Sacramento Bee Reporter Helps Public Avoid Being Stung by Scams

The recipient of CSICOP's Candle in the Dark Award for the media's contribution to skepticism was Edgar Sanchez, a consumer affairs writer for *The Sacramento Bee*. Sanchez, in his weekly Scam Alert column, has tackled many consumer frauds and scams ranging from Nigerian money scams to phony police detectives to car-mileage fraud. Previous winners of the award have included Bill Nye the Science Guy and *Scientific American Frontiers* producer David Huntley. Sanchez was unable to attend the conference, but sent the following statement:

"Every day, more Americans are defrauded. Many are victims of identity theft. Some are duped by self-appointed 'psychics.' Still others fall for that notorious phone call: 'Congratulations! You've won a new car! But you won't get it unless you send a $1,500 processing fee.' To paraphrase Carl Sagan, 'Today's scam world has millions and millions and millions of deceptions.' Today, more than ever, the public needs to be aware of ongoing, devastating scams. That's the mission of *The Sacramento Bee's* weekly Scam Alert: to explain the latest fraud and how to protect yourself. I am honored to receive The Responsibility in Journalism Award. My sincere thanks to CSICOP and the SKEPTICAL INQUIRER. Keep up the good work."

CNN's Larry King was selected for the Snuffed Candle Award, for "encouraging credulity, presenting pseudoscience as genuine, and contributing to the public's lack of understanding of the methods of scientific inquiry." (See "King of the Paranormal" in the November/December 2003 issue of SI.)

New Future Fund

CENTER FOR INQUIRY
International

Our Mission: **To promote and defend reason, science, and freedom of inquiry in all areas of human endeavor.**

Outpacing its origins as a dissenting publisher, today's Center for Inquiry (CFI) movement has emerged as an **educational resource, think tank, and advocacy organization.** We have a bold plan to advance *critical thinking, freedom of inquiry,* and the *scientific outlook* through *research, publishing, education, advocacy,* and *social services.*

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- Operates the world's premier freethought and skeptical libraries
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But, the Center needs to reach out in new ways ... tackling new problems, exerting influence.

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Independent Publications. Besides aiding *Free Inquiry* and *Skeptical Inquirer,* CFI publishes the independent *American Rationalist.* Soon it will sponsor critical scientific reviews of alternative medicine and mental health — with more titles to come.

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Amherst, New York (HQ): We increased library space 30 percent and are completing acquisition of a five-acre parcel for future expansion.

Hollywood, California: Renovation of our 9,000-square-foot Center for Inquiry – West is almost complete. There, a new National Media Center will reach out to — and critically examine — the entertainment media. The 99-seat Steve Allen Theater will also serve as a television production facility.

New York, New York: Our fledgling Center for Inquiry – Metro New York, now in Rockefeller Center, will reach out to the nation's financial, intellectual, and news media centers.

Tampa Bay, Florida: Center for Inquiry – Florida is launching pilot programs and activities, pending a search for permanent quarters.

International Centers: in a bold program expansion, new Centers for Inquiry now operate in Russia, Mexico, Peru, Nigeria, Germany, France, and Nepal, doing vital work in defense of the open society. We plan further expansion into countries with little or no exposure to humanism.

Center for Inquiry-International, Amherst, NY

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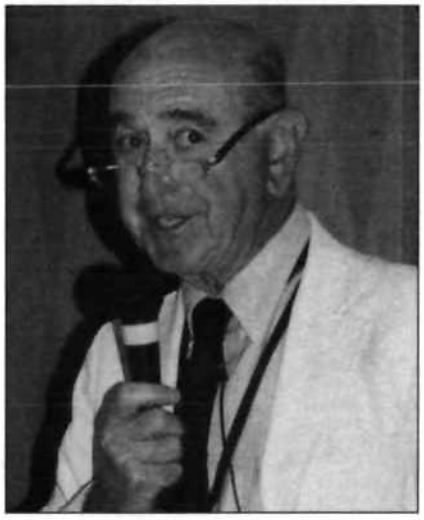
(716)636-4869, ext. 311
e-mail: development@centerforinquiry.net
http://www.centerforinquiry.net

This is just part of our plans. The New Future Fund will make CFI more self-sufficient and lessen dependence on publishing revenues. Please support our efforts. We seek gifts of **cash, multiyear pledges, negotiable securities, paid-up insurance policies,** and **other assets.** Our Development Department can assist you in confidence to design a planned giving program that can benefit yourself and your heirs while supporting the Center's growth.

The Center for Inquiry, the Council for Secular Humanism, and the Committee for the Scientific Investigation of Claims of the Paranormal are 501(c)(3) tax-exempt charitable organizations. Gifts are fully tax-deductible as provided by law.

economy," "Buy my videotape," and even "God told me not to show it."

As the first skeptic to take on these people (although he is pleased he now has a lot of help from skeptics groups throughout the country), Krieg has frequently been the target of promoters' invective, or worse (legal threats, efforts



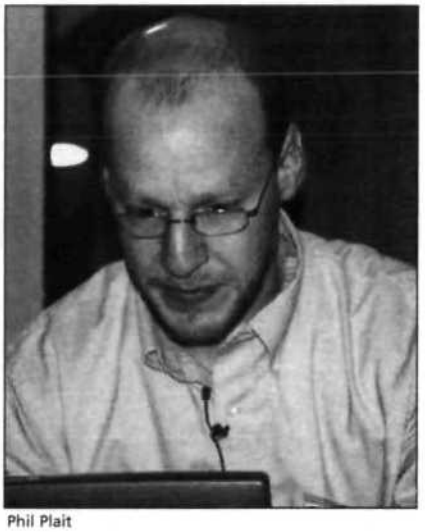
Wallace Sampson

to bury his Web page). But that doesn't seem to bother him. "I enjoy a good fight," he said. "I don't need much sleep. I take 'em all on. It's a hobby for me."

Physicist/mathematician Dave Thomas, President of New Mexicans for Science and Reason, updated his previous investigations of the notorious "Bible Code" (SI, November/December 1997, March/April 1998, and March/April 2003), which he called "the mother of all statistical apologetics." Dave's general point, stated in his usual wry way, is that "hidden messages are everywhere," not just in the Torah, the Hebrew Bible. But do they mean anything? No, of course not.

Employing the same equidistant-letter-sequence methods that *Bible Code* author Michael Drosnin uses to find supposed "hidden messages" in the Torah—and supposedly nowhere else—Dave is able to find such references in just about any work, including *War and Peace*. Dave used to leave his computer on overnight number-crunching various letter-steps to come up with interesting phrases, but he now writes his programs in C++ (it's like "Godzilla," he says) and can do the searches in real time, projecting the results on screen while we watch. Dave found that *Hitler* and *Nazi* occur in Chapter 2, Book 2 of *War and Peace* within a sequence of only 244 words, "one-third of one percent of the length" Drosnin needed to find them in. Thomas found "Roswell UFO" and "Darwin got it right" in Genesis. In a 6,000-word excerpt from the book *Bible Code II* posted on the Internet, Dave earlier found this message, which seems to say it all: "The Bible Code is a silly, dumb, false, evil, nasty, dismal fraud and snake oil hoax."

Astronomer Phil Plait (Sonoma State University) has made a name for himself with his Web site badastronomy.com and now book of the same name. In his talk he wittily skewered a number of bizarre pseudo-astronomical claims, most notably Planet X, a planet unknown to astronomers that was supposedly to enter the solar system in May 2003 and destroy Earth. ("So much for doing your taxes," he said.) He called his exposure of "The Planet (Hoa)X" case "the anatomy of some very, very bad astronomy." The claim was made by a



Phil Plait

woman with little knowledge of astronomy who seemed to be able to see evidence of Planet X everywhere, while astronomers saw nothing unfamiliar.

"The hardest thing about being a skeptic," Plait said about such claimants, "is maintaining a level of politeness." Said

CSICOP ALBUQUERQUE CONFERENCE
Continued on page 24

Constructive Inquiry and Deepest Awe

CSICOP founder and chairman Paul Kurtz hosted and spoke informally at the Saturday evening awards banquet. He spoke of the joy the whole skeptical enterprise has brought him and others. "CSICOP has been grand fun. We all have enjoyed it a great deal." He also emphasized the positive, constructive, affirmative aspects of skeptical inquiry.

CSICOP's constructive criticisms of parapsychology, he said, have helped and encouraged parapsychologists to improve their research protocols. He said CSICOP's investigations into astrology, UFOlogy, repressed memories, and the creation/evolution issue have also had positive consequences.

He said he prefers the term *inquiry*, not *skepticism*. "*Skepticism* should not be taken as a negative. Skeptical inquiry is positive, is constructive," he said. "Skepticism is healthy and is essential to the educated and reflective mind."

He also believes that skeptical inquiry has to apply to every area of human interest, including religion and alternative medicine. "The skeptical attitude ought to be applied to every area of human concern. It is the mark of an educated person."

"We are naturalists," he said. "We are committed to scientific naturalism," and he argued that in America today, "we are dominated by the mythologies and theologies of ancient days." All the while we are in the midst of a "post-Hubbleian revolution," he said, a grand scientific adventure that has given us an astonishing understanding and view of the vast extent of the universe, revelations, he said, that "arise the deepest awe."

Herbal Update: Echinacea Shown Ineffective, Ephedra to Be Banned by FDA

DAVID PARK MUSELLA

Despite claims from proponents and manufacturers of supplements containing the herb Echinacea, a recent study published in the December 3, 2003, *Journal of the American Medical Association* shows that it has little effect in the treatment of upper-respiratory infections (U.R.I.s) in children.

The randomized, double-blind study, performed by James E. Taylor, M.D. et al., treated 337 (of 707) U.R.I.s in 407 children with a compound containing *Echinacea purpurea* (purple cone flower), while the remaining 370 cases received a control placebo. (Two other forms of Echinacea, *E. angustifolia* and *E. pallida*, for which similar claims are made, were not included in the study.) Treatment was begun at the onset of symptoms and continued either to their resolution or for ten days, whichever came first. The study was designed primarily to examine Echinacea's influence on the illnesses' duration and severity as well as any adverse effects. The secondary outcomes of the study include when the severity of symptoms peaked and how long the peaks lasted, the number of days when fever was present, and what was termed a parental "global assessment of severity of symptoms." Statistically, the study showed no significant difference between the Echinacea compound and the placebo for any of the outcome measures except for one item in the adverse events category: The incidence of rashes (possibly due to unreported allergies) among the study's subjects was significantly higher among those who received the Echinacea (7.1 percent) against those who received the placebo (2.7 percent).

The study may, however, show a reduction in the rate of the subsequent incidence of U.R.I.s among the children who received the Echinacea, indicating a possible preventive benefit. But the study's principal author cautions that more research is needed before a definitive conclusion can be reached on that point. It should also be noted that there is little scientific evidence that most *conventional* cold therapies commonly used to treat adult U.R.I.s are effective when used on children, a factor that may have led to the reported increased use of alternative therapies, such as Echinacea, on children.

In related news, the FDA has announced its intention to publish a rule that will effectively ban the manufacture and sale of products containing the herbal supplement ephedra, an unsynthesized form of the drug ephedrine. These compounds are commonly used to speed weight loss and enhance athletic performance. Ephedra, a natural alkaloid that stimulates metabolism by speeding the heart rate while simultaneously constricting blood vessels, has been linked to a number of dangerous health effects including stroke, heart attack, and seizure.

According to its Consumer Alert dated December 30, 2003, the FDA is basing this ban on "an exhaustive and highly resource-intensive process" involving numerous studies and the evaluation of "a prodigious amount of evidence," which showed that ephedrine "presents a significant and unreasonable risk to human health." The alert is available at www.fda.gov/oc/initiatives/ephedra/december2003/advisory.html.

This action comes after a steep drop in the sale of ephedrine-based products, which followed a wave of publicity over the death of Steve Bechler, a professional baseball player. According to an article on the Web site of ABC News (http://abcnews.go.com/wire/Living/ap20031230_1237.html), as many as 155 deaths have been attributed to the use of ephedra. The FDA has been studying the herb and the effects of its use since 1994, and a number of states, including New York, California, and Illinois, had already proposed or enacted bans on the supplement prior to the FDA's announcement. Because of intense lobbying by the herbal industry and alternative medicine proponents, the FDA has no legal authority to regulate herbs and supplements. (See "The Politics and Bad Science of Alternative Medicine," *SI* 27[5], September/October 2003.)

David Park Musella is an editorial assistant with SKEPTICAL INQUIRER.

Canadian Defendants Victorious in Ritual Abuse Case

Throughout the 1980s and early 1990s, a rash of child abuse cases launched a modern witch hunt for Satanists and ritual child abusers. Children, often led by poorly trained investigators, accused adults of ritual rape, torture, and abuse. The news media reported lurid and sensational stories of organized Satanic groups killing babies, murdering innocents, and conducting ghastly rituals. In the wake of the emotional manipulation and media hype, terrible injustices were committed. Hundreds of innocent people were accused of horrible crimes, ostracized by their friends, family, and communities, and even sentenced to prison. The consequences of false accusations of abuse were highlighted in a 2003 documentary film, *Capturing the Friedmans.*

While the majority of cases happened in America, one infamous incident occurred in Saskatchewan, Canada. The case began in 1991 when a young foster boy and his twin sisters began telling stories about the abuse they had suffered while in the care of their adopted family, the Klassens. The children told of being forced to participate in orgies, eat eyeballs, and watch babies being skinned and burned. Despite the sensational and gruesome nature of the claims, there was little or no evidence that the crimes took place. Richard Klassen and eleven others were charged with abusing the children. Most of the cases never made it to trial, and the

children later admitted that they fabricated the sexual assault stories.

Klassen fought to clear his family's name, both in court and in public, launching his Web site www.injusticebusters.com. The case also gained wide attention when it was featured on the investigative newsmagazine *The Fifth Estate* (a Canadian version of *60 Minutes*). In 1994, Klassen filed a malicious-prosecution lawsuit against the lead investigator in the case, Saskatoon police officer Brian Dueck; a therapist, Carol Bunko-Ruys; and two government prosecutors, Matthew Miazga and Sonja Hansen.

On December 30, 2003, Queen's Bench Justice George Baynton ruled that Miazga, Dueck, and Bunko-Ruys maliciously prosecuted the family. "The real scandal, however, is the travesty of justice that was visited upon twelve of those individuals, the plaintiffs in the civil action, by branding them as pedophiles, even though each of them was innocent of the horrendous allegations and criminal offences charged against them."

Baynton cited several reasons why the prosecution rose to the standard of malicious, including a lack of reasonable cause. "In my view, proceeding with charges in such an extraordinary case in the absence of reasonable and probable cause constitutes a strong presumption of malice." Baynton suggested that officer Dueck was "blinded by his zeal to turn the wild allegations of the Ross children into a high-profile case that would portray him as a diligent, unrelenting protector of abused children."

—Benjamin Radford

Benjamin Radford is managing editor of SKEPTICAL INQUIRER *and wrote about the child-abuse hysteria in his 2003 book* Media Mythmakers.

Hampton Court Photo: Ghost or Guest?

Does surveillance-camera footage of a robed figure at England's famed Hampton Court Palace really depict a ghost, as some have suggested?

The spooky incident occurred at the sixteenth-century home of King Henry VIII, just outside London. The place has a lengthy reputation as a haunted site, and some have heralded a new "ghost" photo as among the best ever.

Although reported during the Christmas season of 2003, the mystery began two months earlier with the ringing of alarms in the vicinity of the fire doors. The doors were found closed, but subsequent examination of the closed-circuit camera footage revealed a robed figure—nicknamed Skeletor—slamming the doors shut. It was reported that the doors were flung open at about the same time (1 P.M.) on each of three consecutive days but that the figure was spotted only on the second occasion. Interestingly one person wrote in the visitor's book that she believed she had witnessed a ghost in the area at the time of the incident.

While some researchers noted what they regard as manipulation of the still image, such as by Photoshop or similar programs, skeptic Richard Wiseman believes the *original* footage is genuine. Having examined it he states, "It seems unlikely that there has been any digital manipulation of the footage." He believes the events depicted actually occurred and "that the footage is open to various interpretations."

Wiseman, a professor of psychology at Hertfordshire University, doubts that palace tour guides perpetrated a hoax and believes that the figure might simply be "a visitor dressed in a long coat" helpfully closing the doors.

My own study also indicated that the image probably depicted a real person. Examination of a high-resolution electronic copy of the published still reveals a solid figure with shadow patterns consistent with an earthly figure photographed in ambient light. That is in contrast to most traditional "ghost" photographs which typically depict ethereal, transparent figures.

Even though the footage may be genuine, the event itself could have been deliberately staged—a possibility suggested by the repeated opening of the fire doors and the pre-Halloween timing of the incidents.

—Joe Nickell

Joe Nickell is author of several books including Camera Clues: A Handbook of Photographic Investigation. □

Still image of the "Hampton Court Ghost."

New Year's Message: We Welcome 2004

From Paul Kurtz, Chairman
Center for Inquiry–*International*

The Center for Inquiry achieved unprecedented growth in 2003. We wish to thank all the readers of our various publications and the members of the nearly 875 regional, community, and campus groups now affiliated with the Center for Inquiry. We look forward with great enthusiasm to 2004.

The Center for Inquiry is unique. It is committed "to reason, science, free inquiry and ethical alternatives in every area of human endeavor." Its main interest is the public understanding and appreciation of reason and science and their application to questions of value. It wishes to define and defend the naturalistic outlook.

The Center for Inquiry movement represents a coalition of several national and international organizations, including the Committee for the Scientific Investigation of Claims of the Paranormal (publisher of SKEPTICAL INQUIRER) and the Council for Secular Humanism (*Free Inquiry*), the Commission for Scientific Medicine and Mental Health, CFI–*OnCampus*, African Americans for Humanism, SOS (Secular Organizations for Sobriety), the Society of Humanist Philosophers, the International Academy of Humanism, the Committee for the Scientific Investigation of Religion, *The American Rationalist*, and *The Humanist Perspective* TV series, which produced over forty programs last year and aired on nearly thirty stations nationwide. All told, it publishes or supports sixteen magazines and newsletters.

The Center for Inquiry maintains four branches in the United States (in Amherst, Metro N.Y., Los Angeles, and Tampa Bay) with four more in various

stages of development, and six Centers internationally (in Russia, Germany, France, Nepal, Peru, and Nigeria), with another four being planned. Affiliated with it are skeptical, secular humanist, and abstinence organizations worldwide. Many distinguished fellows and humanist laureates are now associated with its diverse programs.

Among the high points of this past year and projections for the upcoming year:

1) The Center for Inquiry announced the merger of two medical councils, forming the Commission for Scientific Medicine and Mental Health (CSMMH). This commission is now a division of the Center for Inquiry. The Center has assumed publication of two medical journals devoted to advancing evidence-based medical and mental-health practice. A new Executive Director has been appointed to head up the Commission in January 2004. Its purpose is critical evaluation of questionable health cures and public education about the nature of scientific medicine.

2) *Free Inquiry* magazine increased its frequency from quarterly to bimonthly—under the guidance of Tom Flynn and Andrea Szalanski, Editor and Managing Editor. A new Spanish-language magazine, *Pensar* ("To Think"), was announced in 2003. Published by CSICOP, its first issue appeared in January of 2004. It is edited by Alejandro Borgo of Argentina with a distinguished list of editorial representatives from other Latin America countries, including Peru, Mexico, Brazil, Venezuela, Chile, Colombia, Paraguay, and Puerto Rico. This Spanish magazine will be distributed throughout North and South America.

3) The CFI–*OnCampus* movement (formerly the Campus Freethought Alliance) sponsored numerous debates in 2003. Among these were Edward Tabash debating Richard Swinburne (an Oxford philosopher) at the University of Montana in Missoula (over 1,000

people attended), and DJ Grothe debating David Noebel at UCLA. The campus program has hired another campus organizer to further expand its growth.

4) The Center for Inquiry–*West* and the Steve Allen Theater celebrated a gala grand opening on November 15, 2003. Several hundred people attended the open house. Jayne Meadows, comedian Gabe Kaplan, and the staff of CFI participated, including Paul Kurtz, Jan Eisler, Tom Flynn, Jim Underdown, Eddie Tabash, DJ Grothe, David Koepsell and others. A bust of Steve Allen was unveiled at the opening.

5) The Center for Inquiry–*MetroNY* is pleased to announce that it is moving to larger headquarters at Rockefeller Center (from Thirty Rockefeller Plaza to One Rockefeller Center) in early January 2004. The new office suite on the 27th floor will have a reading room and a conference room, and has a splendid view of New York City. It also announced the appointment of a new Director and the integration of the Long Island Secular Humanist Society into the Center for Inquiry–*MetroNY*.

6) The Center for Inquiry is pleased to announce that its academic and research programs have formally affiliated with the State University of New York at Buffalo:

- It is planning a Master's degree in cooperation with the university on the "public understanding and appreciation of reason and science."
- It has announced a new fellowship postdoctoral-research program. There will be two awards totaling $30,000 for 2004–05 in cooperation with psychology, philosophy, and other departments. Applications are being accepted (by Austin Dacey at ADacey@Centerfor Inquiry.net).
- Research fellows and key staff members at the Center for Inquiry may also apply for appointments at the University as visiting professors, fellows, or scholars.
- The Center for Inquiry libraries (holdings of over 65,000 books, monographs, and journals) are available to research scholars and students at SUNY. Their collection can be accessed online on the OCLC (the national consortium of universities). Its rare book room was officially opened, containing many priceless editions (including the first editions of Tom Paine's *The Age of Reason*, Ethan Allen's *Reason: The Only Oracle of Man*, and Pierre Bayle's *Dictionary*).

State University of New York at Buffalo

7) The Center for Inquiry welcomed several visiting research fellows in 2003: Dr. Manuel Paz y Miño of Peru; Dr. Gopi Upreti of Nepal; Professor Valerie Kuvakin of Moscow State University; Professor Vladmir Shtinov, formerly of Urols University; James Herrick of the Rationalist Press Association of the United Kingdom; Dr. Bert Gasenbeek, Managing Director of the Humanist Archives, Utrecht, the Netherlands; Dr. Zheng Nian of Beijing, China. The Center has opened a second guest house to accommodate visitors and research Fellows.

8) The Center expended over $250,000 in 2003 for the support of international programs and affiliated organizations. This is in addition to Prometheus books published abroad or distributed free worldwide to cognate organizations. The Center for Inquiry-International is now accepting applications for support from individuals who are interested in pursuing research programs at the Center for Inquiry or any one of its four North American branches. It also welcomes international applications from individuals or organizations who wish to develop programs in cooperation with CFI in their respective countries.

9) The Center for Inquiry's media and public-relations department scheduled hundreds of radio and TV programs featuring its staff members, including Joe Nickell, Jim Underdown, Tom Flynn, Ed Buckner (Southern Regional spokesperson), Paul Kurtz, Ibn Warraq, Kevin Christopher, DJ Grothe, Benjamin Radford, and others. There were visiting TV crews from the BBC, and the Canadian Broadcasting Corporation, as well as South Korea, Japan, and other countries. It also initiated hundreds of news stories, many of them syndicated widely to newspapers and magazines in North America and throughout the world.

10) Staff members of the Center (CSICOP and the Council for Secular Humanism) lectured in several foreign countries: Paul Kurtz at the University of London; University of Belgrade, Serbia; and Warsaw, Poland; and Bill Cooke in Belgrade, Warsaw and Abu Dhabi. The Center and its affiliated organizations sponsored national and international conferences in Washington, D.C. (CSH, April), Albuquerque, New Mexico (CSICOP, October), and London, England (with European Skeptics and CSICOP, September). It sponsored three Institute programs: Amherst, N.Y. (July), Debater's Toolbox (CSH, Amherst, August), Skeptic's Toolbox, University of Oregon, Eugene, (CSICOP, August). It concluded with a conference titled "Assault on Scientific

Medicine" at the New York Academy of Medicine (CSMMH, November).

11) The Center for Inquiry–*International* announced in September 2003 the launching of a four-year, $26.25 million capital-fund drive. The campaign is intended to raise funds for the expansion of the Center's activities in Los Angeles, Tampa Bay, New York City, and Amherst, New York. In addition, the Center desires to raise endowment funds to support its international programs, CFI–*OnCampus*, its educational programs at its Research Institute, and the new Commission for Scientific Medicine and Mental Health. (For information, contact Richard Hull at RHull@CenterforInquiry.net.)

12) We are glad to welcome to our staff the following key appointments: David Koepsell, Executive Director, CSH (Council for Secular Humanism); Prof. Richard Hull, Development Director; Toni Van Pelt, Executive Director, CFI–*Florida*; Susan Jacoby, Director, CFI–*MetroNY*; Dr. Ed Buckner, Southern Regional Director; Andrew Skolnick, Executive Director, the Commission for Scientific Medicine and Mental Health; Jerry Dantone, Coordinator, the Center for Inquiry meeting in Long Island; Zachary Miner, Campus Organizer, CFI–*OnCampus*; and Eric Chinchon, New York State Coordinator, SOS (Secular Organizations for Sobriety).

Conclusion

I would like to end this New Year's message by thanking the members of the staff for their valiant work in defending reason, science, and free inquiry during 2003. I also wish to thank the hundreds of thousands of readers and volunteers around the world who have supported our efforts. Without your help, the important work we do would not be possible.

The beginning years of the twenty-first century demonstrate both the grave dangers and unparalleled opportunities that we face.

The so-called "War against terrorism," the religious and ideological conflicts that fester, graphically illustrate the urgent need to develop rational, ethical alternatives. The continued disparities between the affluent and poorer regions of the globe emphasize the importance of reducing poverty and disease and extending the benefits of education and democracy to everyone.

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The Stigmata of Lilian Bernas

Canadian Lilian Bernas claims to exhibit—"in a supernatural state"—the wounds of Christ. On March 1, 2002, I observed one of a series of Bernas's bleedings. It was the eleventh such event that "the Lord allows me to experience on the first Friday of the month," she told the audience, "with one more to come" (Bernas 2002). But was the event really supernatural or only a magic show?

Stigmata

Popularly associated with saintliness, stigmata refers to the wounds of Christ's crucifixion supposedly reproduced spontaneously on the body of a Christian. Following the death of Jesus, about A.D. 29 or 30, the phenomenon waited nearly twelve centuries to appear (putting aside a cryptic Biblical reference to St. Paul [Galatians 6:17]). St. Francis of Assisi (1182–1226) is credited with being the first "true" stigmatist (after a man with the crucifixion wounds was arrested for imposture two years earlier).

Following St. Francis, a few hundred people have exhibited stigmata, including several saints—most recent Padre Pio (1887–1968). He was canonized in 2002, although not for his stigmata, the Catholic Church never having declared the alleged phenomenon miraculous (D'Emilio 2002; Tokasz 2003).

Indeed, in addition to its copycat aspect, stigmata is suspect on other grounds. It appeared in mostly Roman Catholic countries, notably Italy, until the twentieth century. Also, the form and placement of the wounds has evolved. For example, those of St. Francis (except for his side wound) "were not wounds which bled but impressions of the heads of the nails, round and black and standing clear from the flesh" (Harrison 1994, 25). Subsequently, stigmata have typically been bleeding wounds, albeit with "no consistency even remotely suggesting them as replications of one single, original pattern" (Wilson 1988, 63).

Figure 1. Canadian Lilian Bernas impressed many at the eleventh of twelve "first Friday" stigmata materializations.

It is well established that many stigmatics were engaging in trickery. For instance, Magdalena de la Cruz confessed, during a serious illness in 1543, that her stigmata had been faked. In 1587, Maria de la Visitacion, known as the "holy nun of Lisbon," was caught painting fake wounds on her hands. Pope Pius IX privately branded as a fraud Palma Maria Matarelli (1825–1888), stating that "she has befooled a whole crowd of pious and credulous souls." And more recently, in 1984, an Italian court convicted stigmatic Gigliola Giorgini of fraud (Wilson 1988, 26, 42, 147).

The twentieth century's two best-known stigmatics—Theresa Neumann and Padre Pio—were suspected of deception. A Professor Martini who conducted a surveillance of Neumann observed that blood would flow from her wounds only when he was persuaded to leave the room, as if something "needed to be hidden from observation" (Wilson 1988, 53, 114–115). And a pathologist who examined Padre Pio concluded that his wounds were superficial at best and that the side "wound" had not penetrated the skin at all (Ruffin 1982, 146–154, 305).

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Catholic scholar Herbert Thurston (1952, 100) found "no satisfactory case of stigmatization since St. Francis of Assisi." He believed the phenomena was due to suggestion, but attempts to duplicate it experimentally through hypnosis have ranged from the doubtful to the unsuccessful. As to St. Francis, his extraordinary zeal to imitate Jesus may have led him to engage in a pious deception (Nickell 2000).

A New Stigmatist

Enter Lilian Bernas, a Catholic convert (in 1989) and one-time nursing-home worker. She first exhibited stigmata during Easter of 1992, having previously received visions of Jesus. According to one of her two self-published booklets, Jesus appears frequently to her, addressing her as "My suffering soul," "My sweet petal," and "My child" (Bernas 1999).

The Archdiocese of Ottawa, Ontario, where she then lived, established a commission to investigate Bernas's claims. "The inquiry did not make a judgment on the authenticity," stated a spokeswoman for the Archdiocese, Gabrielle Tasse. Tasse told *The Buffalo News*, "It doesn't really concern the general public. It just creates propaganda." The Catholic Church often resists publicity regarding supernatural claims, noted the Rev. Thomas Reese, a Jesuit priest who edits the weekly Catholic magazine, *America*. "The church is very skeptical of these things," Rev. Reese explained (Tokasz 2003).

Bernas now resides in Niagara-on-the-Lake, Ontario, living with a retired couple whom she asked to take her in in 1996, supposedly at Jesus's request. They are impressed with Bernas whom they regard as a "victim soul" (one who suffers for others). In 2001 the *Ottawa Citizen* published a profile of Bernas (Wake 2001), apparently provoking displeasure from her home archdiocese of Ottawa. Their policy (according to a spokesman for the Buffalo Diocese) is "that she is not to speak publicly because her faith journey is private" (Tokasz 2003).

However, Bernas does speak publicly, addressing the faithful and the curious at various churches. I attended a talk she gave, for example, at Resurrection Church in Cheektowaga, New York. Although she claimed Jesus guided her in her talks (she sometimes departed from her prepared text), she said that "the Devil" was at her elbow at all times and that she had to struggle with pride and self will. She spoke of Lent, of praying the Rosary, and other Catholic topics, and claimed that Jesus had given her "a vision of aborted babies" (Bernas 2002a).

Figure 2. Although Bernas attracts the credulous, her stigmata do not convincingly replicate the wounds of Christ's crucifixion.

Afterward, she answered questions from those who gathered around her. Asked what Jesus looked like, she said he appeared as we did, solid. She added that he had shoulder-length hair with a beard and a mustache, and wore a white robe. In other words, he exhibited the conventional likeness of Jesus as it has evolved in art. Bernas's devotees exhibit a portrait of Jesus, "drawn under the inspiration of the Holy Spirit on May 20, 1994, By Lil Bernas."

The Wounds

I asked Bernas about her wounds, noting that there were reddish scars on the backs of her hands. She replied that she had also bled from the palms on occasion, but that no marks were left in those instances. She told me she was "permitted" to retain those on the backs of her hands and also on the tops of her feet. Someone asked about cross-shaped wounds (she has, for example, an apparent cruciform scar on her right jaw near the ear), and she stated that such stigmata were of the Devil, that before her genuine stigmata came she had periods of possession (Bernas 2002a).

I found the absence of wounds on the palms and soles highly suspicious. A sham stigmatist might well avoid those areas which would be subjected to additional *pain—and made more difficult to heal*—whenever one walked or grasped something. But a person truly exhibiting the nail wounds of Jesus should have his or her hands and feet completely pierced.

When I subsequently attended an exhibition of Lilian Bernas's stigmata (at Navy Hall, Niagara-on-the-Lake, March 1, 2002), my suspicions were increased. Not only was the bleeding already in progress when she appeared, but there were only the most superficial wounds. These were limited to the backs of the hands and tops of the feet, in addition to small wounds on the scalp, supposedly from a crown of thorns (John 19:2). The latter were only in the front as if merely for show. (See figure 1.)

Significantly, there was no side wound, like that inflicted on Jesus by a Roman soldier's lance (John 19:34; 20:25, 27). Such a large wound would represent a real commitment by a fake stigmatist. It rarely appears, and then usually in a questionable fashion. Bernas exhibits a photo of an alleged wound in her left side, but it lacked rivulets of blood and—conveniently—was claimed to have soon disappeared without a trace. Bernas did say she was to receive a side wound later in the day (Bernas 2002b), but of course the crowd would not be there to witness the alleged happening.

The side wound was not the only one of Bernas's stigmata reputed to have unique properties seemingly best displayed in photographs. Bernas exhibits other photos that depict a squarish nail head emerging from a hand wound (harkening back to St. Francis); a thorn in her forehead that supposedly emerged over a week's time; even an entire crown of thorns that allegedly materialized around Bernas's head—believe it or not!

As we watched Bernas bleed, I regretted that we were not getting to see such

remarkable manifestations. I observed that her wounds soon ceased to flow, consistent with their having been inflicted just before she came out. After she had spoken to the audience for about an hour, people gathered to speak to Bernas (figure 2). (While shaking hands with her, one man attempted to get, rather surreptitiously, a sample of her blood, presumably as a magical "relic." He clasped his other hand, containing a folded handkerchief, against the back of her hand. Unfortunately the blood had dried, and even rubbing did not yield a visible trace.)

Although I shook Bernas's bloody hand, I obtained a better look at a wound shortly before, when she hugged the woman in front of me and thus placed her hand virtually under my nose. I noticed that the actual wound looked like a small slit, but surrounding that was a larger red area; this appeared to have been deliberately formed of blood in order to simulate the appearance of a larger wound, like one formed by a Roman nail. (For my demonstration of a similar effect see Nickell 2000, 27–28.)

Assessment

Bernas makes still other supernatural claims. For example, she says towels from her stigmata sessions, put away in plastic bags, allegedly "disappear within 48 hours" (Wake 2001). (I will wager they would not vanish while in my custody.)

Such outlandish and unsubstantiated claims should provoke skepticism in all but the most gullible. Yet a professor of philosophy at a Catholic college took exception to my views. I had told *The Buffalo News* that, on the evidence, I regarded stigmatics as "pious frauds," and I said of Lilian Bernas' stigmata: "Everything about it was consistent with trickery. Nothing about it was in the slightest way supernatural or intriguing" (Tokasz 2003).

Professor John Zeis (2003) replied with the astonishing statement that "Trickery is consistent with any reported miracle (including Jesus' resurrection) but that is no reason to reject belief in the miracle." He found more reasonable a priest's statement that "It is up to each person to believe or not."

CSICOP Public Relations Director Kevin Christopher (2003) responded: "Zeis is suggesting that objective evidence is irrelevant. What, in fact could be a more unreasonable conclusion?" Christopher also replied to Zeis's claim that "the SKEPTICAL INQUIRER is biased against claims concerning faith in the miraculous." Stated Christopher: "The magazine's mission is to inform its readers about the state of the evidence for paranormal and supernatural claims. When the evidence is poor or nonexistent, it is not 'biased' to report that fact. It is, in fact, a moral duty."

Acknowledgments

I am grateful to Martin Braun for advising me of a lecture by Lilian Bernas. Benjamin Radford (SKEPTICAL INQUIRER) and Jenny Everett (*Popular Science*) accompanied me to witness Bernas's stigmata and shared valuable notes and observations. I also received very useful material from John Zachritz.

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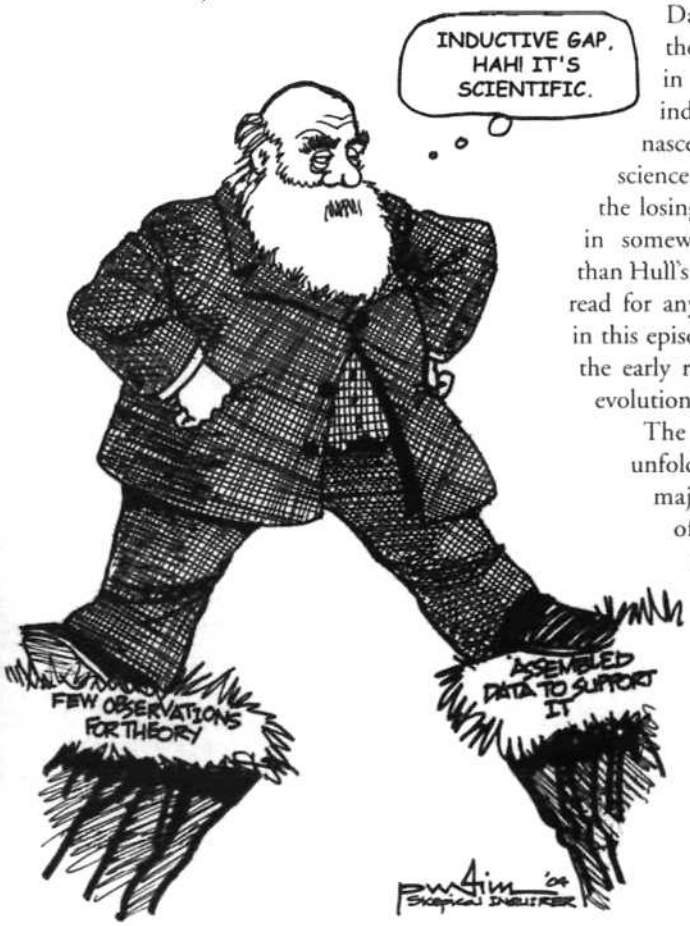
Darwin Against the Philosophers

According to David Hull, "evolutionary theory seems capable of offending almost everyone." Readers of this column will surely be familiar with the sort of offense that has come from creationist quarters ever since the publication of Darwin's *Origin of Species*. Of course, some of Darwin's contemporary colleagues also raised scientific objections to the theories of common descent and natural selection. But such objections were quickly overcome, and evolution was soon considered as controversial in biology as quantum mechanics is in modern physics.

However, reading Hull's book *Darwin and His Critics*, one discovers that an entirely different sort of attack caused quite a bit of trouble for Darwin and his fledgling theory: he got himself caught in the middle of the great induction debate in the then-nascent field of philosophy of science. And he seemed to be on the losing side. I will tell the story in somewhat less technical terms than Hull's, though his book is a must read for anybody interested not only in this episode, but more generally in the early reception of the theory of evolution by Victorian intellectuals.



The great induction debate unfolded between two of the major British philosophers of Darwin's time, John Stuart Mill and William Whewell. Both were attempting to improve on Francis Bacon's notion of induction. Bacon, by many accounts the originator of what today we call philosophy of science, wanted to establish the scientific method on firmer foundations than what he thought (erroneously, it turns out) Aristotle had done. The latter was known (and still is) for his deductive method, which he exemplified with famous syllogisms such as: (premise 1) All men are mortal; (premise 2) Socrates is a man; therefore (conclusion) Socrates is mortal.

The problem with deduction, as Bacon and the players in the induction debate saw it, was that it arrived at specific conclusions starting from an unjustified leap to generalizations. Bacon therefore proposed that a better method was the inductive one, by which he meant the cautious construction of general conclusions based on an increasing number of observations. But, it was quickly realized, this wouldn't do, since it amounted to an unwarranted extrapolation from known to unknown, with no independent assurance that the new observations would emerge from the same causes as the old ones (see "Thinking about Science" in SI, May/June 2003).

Both Mill and Whewell tried to do better than Bacon. Mill thought that scientists could use two kinds of

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induction, which would mutually reinforce each other. *Enumerative induction* was a strengthened version of Bacon's, where the process of extrapolation was made sound by the Law of Universal Causation (i.e., the idea that all phenomena have causes, and that it is parsimonious to attribute similar causes to similar phenomena). *Eliminative induction* was an operation by which the causes of natural phenomena were discovered by successive elimination of unsuitable alternatives, based on tests as stringent as could be devised.

Whewell, on the other hand, thought that scientific investigation has to start with hypotheses, which have heuristic value in guiding one's inquiry. When a hypothesis is confronted with the data, one knows if it is true because of the feeling of "consilience" (we would say congruence) generated by the match between data and hypothesis. Whewell also retained the term "induction" for his view, probably because of the patina of prestige lent by Bacon.

There were problems with both views. Mill did not like the idea of judging the truth of hypotheses based on how well they matched the data, because of the well-known problem that more than one hypothesis could fit the observations equally well. On the other hand, neither enumerative nor eliminative induction are logical guarantors of truth, because they are themselves based on assumptions about the world. (It turns out that there is no logical guarantor of truth about nature, if one does not count mathematical proofs; scientists just have to do with very likely maybes.)

What does have all of this to do with Darwin? The problem is that Mill and Whewell—regardless of their internal disagreements—saw Darwin's work in *Origin* as an egregious example of deduction. Darwin had, based on a few observations, jumped to the generalization of natural selection, and had then deduced a series of consequences, which he spent twenty years trying to back up with observations. This, apparently, did not qualify as induction, and was therefore unscientific. As Hull puts it, the philosophers were "equally adamant in their conviction that the *Origin of Species* was just one mass of conjecture."

It turns out, however, that the philosophers were wrong and the scientist on the mark. Ironically, an analysis of Darwin's work (and of how he himself describes it) reveals that his method was actually very close to the one proposed by Whewell (though in clear opposition to Mill's). In Darwin's own words: "How odd it is that anyone should not see that all observation must be for or against some view if it is to be of any service!" That is, Darwin was applying Whewell's method of consilience, or inference to the best explanation, though he probably did not buy into the philosophical basis (idealistic rationalism) that inspired Whewell. Was this a case in which philosophy slowed down the progress of science? Or did Darwin's awareness of the philosophical issues surrounding his research make him more careful and, ultimately, more successful? To the historian of science it is a nontrivial task to figure this one out.

Further Reading

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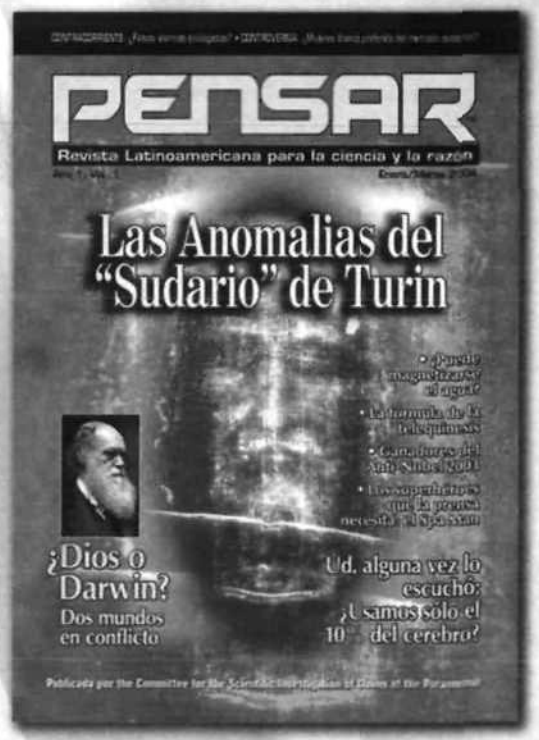
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The Case of the Holy Fraudster

The next World Skeptics Congress will be held October 8–10, 2004, in Italy (for more information, see www.cicap.org/congress). For this reason, I am devoting four columns to popular Italian mysteries; the previous one was on a very special liquefying blood. Should you come to the Congress, you could also take advantage of your trip to visit these famous enigmas.

One of Italy's most famous "enigmas" certainly is Turin's Holy Shroud. This cloth, that allegedly covered the body of Jesus Christ and retained a mysterious negative image of it, has attracted incredible controversy, especially after carbon 14 dating in 1988 revealed that the cloth had a Medieval origin, in agreement with the date of its first appearance (circa 1350, in Lirey near Troyes, France). Believers in the supernatural nature of the image on the cloth have always maintained that "somehow" the dating had to be wrong.

Their hopes were apparently met when a Russian researcher, Dmitri A. Kouznetsov, revealed he had found proof that an ancient fire had probably modified the carbon content of the cloth, thus altering any subsequent attempt in dating it. Kouznetsov's claims were enough to have the believers say that his work was further proof of the authenticity of the Shroud.

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The Unmaking of a Creationist

Many readers of this magazine may recall Kouznetsov. Born in 1955, he worked as a biologist in Moscow until 1989, when he abruptly ended his career in biology. Since 1983, he has been an active creationist. He was associated with the Institute for Creation Research, located near San Diego, California, the Slavic Gospel Association, and other similar associations. He was connected with American creationists such as Duane Gish and Henry Morris.

In 1989, he published a paper in the *International Journal of Neuroscience* (*IJN*) (49, 43–59), where he claimed he had found experimental proof in favor of creationist theses. The paper launched him into an immediate international career as a creationist propagandist. He toured the United States, lecturing about the biological proofs of creationism and published several papers in creationist journals.

In 1994, a Swedish biologist, Professor Dan Larhammar of Uppsala University, examined Kouznetsov's 1989 paper in the *IJN* (77, 199–201). Apart from criticizing the contents, he discovered that eight key references in the bibliography referred to nonexistent papers in nonexistent journals. A recent check by Italian researcher Gian Marco Rinaldi revealed that the number of references to nonexistent papers is probably around fifty. Larhammar published his criticism in a note in the same journal (1994) and subsequently summarized it in SKEPTICAL INQUIRER (March/April 1995). The whole story of the faked references was also told in 1995 in the Australian journal *The Skeptic*.

For a while, Kouznetsov was embroiled in the scandal. The creationist associations that had promoted him publicly dissociated themselves from him. Kouznetsov's career as a creationist ended in 1995.

However, the man was not done—he was in fact starting an entirely new career as a specialist in archaeological chemistry. During the very same months when the creationist scandal erupted, he was able to publish, in important chemical and archaeological journals, no less than nine papers related to the Shroud of Turin.

Friend and colleague Gian Marco Rinaldi has recently conducted the most in-depth investigation on Kouznetsov's claims ever attempted and has come up with a series of startling discoveries. Right from the start, clear evidence pointing to serious fraud emerged. Though Rinaldi kept Kouznetsov at least partially informed about this inquiry, the Russian researcher has not yet replied to several letters sent to him.

The Making of a Sindonologist

Kouznetsov's new career as a "sindonologist" was originated by Guy Berthault, a wealthy French creationist known for financing work in various fields of unusual research. Kouznetsov met Berthault for the first time at a creationist conference in England in 1992 and, from then on, in almost all of his papers, Kouznetsov thanks Berthault for his financial support.

Kouznetsov first appeared among sindonologists at a conference in Rome in 1993. Between 1994 and 1996, he published nine papers in qualified chemical or archaeological journals, where, more or less directly, he claimed to have provided experimental proof for the thesis that the composition of carbon isotopes in the linen cellulose can be altered as an effect of various factors, thus explaining the results of the 1988 dating. The obvious consequence, he claimed, was that the Shroud may be much older than established by the laboratories; indeed, it may be 2,000 years old. Until very recently, in sindonological publications (especially in Italy) he has been hailed as sort of saviour for the Shroud of Turin.

In 1997, however, he met with a misadventure in the United States, where he was jailed for bad checks in Connecticut and imprisoned for five months. By accepting a six-month rehabilitation program, he was freed and avoided trial.

After this episode, he returned to Moscow, but began to lose the confidence of his former supporters. The corpus of his publications connected with the Shroud and published in qualified scientific journals amounts to ten papers, all coauthored with his friend Andrey Ivanov. Nine of the papers were produced during several months in 1994. Actually, they are just three papers, cloned to nine by multiple publication. Rinaldi carefully examined each one, every single quotation, reference, publication, and affiliation given in them.

All papers are experimental studies of chemical modifications in the cellulose of linen textiles: a natural modification (alkylation) simply due to aging (groups 1 and 4, as listed in the references), or an induced modification due to ventilation (that is, to microorganisms brought on the textile from the atmosphere) (group 2), or to heating (group 3). The chemical modification of cellulose is the requisite to his thesis that the carbon isotopes composition of the shroud has changed as a consequence of aging, of microbial action, and of heating (due to a fire that nearly burned the shroud in 1532). The thesis sounds unrealistic and the results of his experiments look very odd. Rinaldi's suspicions of fraud, however, are based on indirect clues, independent of the claimed experimental results.

On the Tracks of a Fraudster

In all of the papers, the author's affiliation is to "E.A. [or S.A.] Sedov Biopolymer Research Laboratories" in Moscow. According to Kouznetsov himself, this was a private laboratory—of which he was the director—that was active between 1992 and 1998. It appears that no other research papers with this affiliation have ever been published in chemical literature. But things get darker.

Kouznetsov's last paper (4) is a report of an experimental study on four ancient samples, of various ages, of burial linen of Irish provenance. Kouznetsov claims that the four samples were donated to him by a private foundation and by two private individuals in Ireland, and mentions two Irish consultants. For three pieces of the burial linen, he mentions the names of historical people who were buried in the tombs.

With the collaboration of a number of people in Ireland (among them archaeologists and local historians), Rinaldi has collected strong evidence that Kouznetsov has never been supplied with any of the samples. The Irish donors and consultants do not exist, and the sites and tombs have not been excavated or do not exist anymore. Since the paper is a report of experiments on just those four samples, then if the samples do not exist, it becomes clear that Kouznetsov has never done any experiments and has fabricated the whole report out of his own imagination.

In an independent inquiry, the officers of the Antiquities Division of the National Museum of Ireland, in Dublin, whom Rinaldi had alerted, reached the same conclusions: Kouznetsov could not possibly have obtained the samples of ancient Irish textiles.

In the acknowledgements to his paper, Kouznetsov thanks eleven people from eight American universities. At least six of these universities have never had the claimed persons on their staff. Two of the universities have not yet answered, but in both cases their Web sites list all the names of their staff and the names listed by Kouznetsov are not present.

One key reference is to a paper from the *Proceedings of the Georgian Academy of Science*. From Tbilisi, Rinaldi was informed that the paper does not exist in any of their publications and that the names of the three authors are not known.

Prompted by the results of the Irish investigation, Rinaldi turned his attention to a group of papers (1) where Kouznetsov reports about similar experiments on the chemistry of cellulose in fifteen samples of ancient textiles of various ages. Fourteen samples, so he claimed, had been supplied by six museums in Russia (two in Moscow and one in Vladimir), the Ukraine (Simpheropol and Ternopil), and Uzbekistan (Samarkand). He gives the name (not the street address) and the city for each museum, and, moreover, he mentions the names of the directors or curators whom he thanks in the acknowledgements for having supplied the samples.

Rinaldi has obtained evidence that these museums do not exist. As to the two museums in Moscow, things aren't clear, since in the city there are hundreds of museums, and it seems that nobody has the complete list. Correspondents from Russia cannot confirm the existence of those particular museums. Kouznetsov's experiments, as he describes them, are not done on single samples but are comparisons among several samples of different ages, and lacking the samples from four of the museums, he could not have done the experiments. In Moscow, an archeologist in correspondence with Rinaldi asked Kouznetsov about his faked claims, but he was unable to answer.

Two other papers (2) are reports of comparisons between experiments

performed in two different geographical locations, Moscow and Krasnodar. Kouznetsov and two coauthors worked in Moscow; two other coauthors worked concurrently in Krasnodar. These latter two coauthors are indicated as affiliated to a "Krasnodar Center for Environmental Studies, University of Rostov-on-Don, Krasnodar-2," but the complete address (with street name) is not given.

Rinaldi suspected that this Krasnodar Center and its two authors did not exist. He lacked contacts in southern Russia, and for this part of the inquiry much help was given by Odile Eisenstein of the University of Montpellier, France. She was the editor-in-chief of the *New Journal of Chemistry* at the time of publication of one of the papers (2a). From the information she collected and from further investigative work it appears that the "Krasnodar Center for Environmental Studies" does not exist.

The groups of papers labeled (2) and (3, except for 3a) contain results of Accelerator Mass Spectrometry (AMS) measurements on carbon isotopes. Kouznetsov claims that the AMS work was done in Protvino (near Moscow). Rinaldi's investigative work on these was very long and difficult, but in the end it appears that even the laboratory quoted by Kouznetsov is fictitious. The AMS work, for example, is credited to a Ivan Shevardin and a Sergey Bakhroushin, neither of whom seems to be a familiar name among the international AMS community. Furthermore, it appears that AMS measurements were not available in Russia in 1994 (and still weren't in 2001).

Conclusions

Rinaldi painstakingly conducted a fascinating investigation which takes more than forty pages in *Scienza & Paranormale* (43, May/June 2002), the magazine of CICAP, the Italian skeptics. It is impossible here to give all the details of this incredible episode, but from what we have seen already it appears that the famous experiments that seemed to "save" the Shroud were a complete fabrication. Kouznetsov was repeatedly invited to defend himself, but so far he has refused to do so. Meanwhile, the sindonologists are quietly removing any reference to his work from their Web sites and papers. Does this mean that they now accept the 1988 carbon dating?

References

(1) Group of "aging" papers:

(1a) *Analytical Chemistry*, 66 (23), 1994, 4359–65

(1b) *Journal of Archaeological Science*, 23 (1), 1996, 23–34

(1c) In Orna, M.V., ed., *Archaeological Chemistry*, American Chemical Society Symposium Series, 1996, 254–68

(2) Group of "ventilation" papers:

(2a) *New Journal of Chemistry*, 19 (12), 1995, 1285–89

(2b) *Textile Research Journal*, 66 (2), 1996, 111–14

(3) Group of "heating" papers:

(3a) *Textile Research Journal*, 65 (4) 1995, 236–40

(3b) *Journal of Archaeological Science*, 23 (1), 1996, 109–21

(3c) *Acta Archaeologica Academiae Scientiarum Hungaricae*, 48, 1996, 261–79

(3d) In Orna, M.V., ed., *Archaeological Chemistry*, ACS Symp. Series, 1996, 229–47

(4) *Studies in Conservation* (London), 45, 2000, 117–26

CSICOP ALBUQUERQUE CONFERENCE

Continued from page 11

Plait: "You cannot debunk these people. They are completely impervious to logic. . . . It's just ridiculous."

Another claim of a "Harmonic Concordance" revolved around an alignment of astronomical objects. But it mysteriously invoked, along with the moon and the major planets, Chiron, a 20-kilometer icy rock out past Saturn. Why? Because if Chiron weren't on the chart, "the chart wouldn't work," Plait said. "It doesn't matter," he said. The whole thing is a farce.

Plait labeled his viewgraphs with terms such as "The Achy Breaky Chart," "The Grand Malignment," and "Ommmmmmgod!" The latter was a reference to believers' attempts to get 144,000 people chanting on the night of the concordance. The meaning? Plait asked, answering, "Not a damn thing!"

And so it went. . . speaker after speaker went on to expose promulgators of misinformation, misconceptions, hoaxes, scams, myths, legends, deceptions, and various other examples of human foibles and folly.

Benjamin Radford, SKEPTICAL INQUIRER's managing editor and author of the newly published *Media Mythmakers* (and co-author of a book with the same title as the conference), spoke on hoaxes and myths about monsters. He's another example of the rising new generation of skeptics. So is Jim Underdown, executive director of the Center for Inquiry–West, who described his investigations in the studios of TV speak-to-the-dead mediums John Edward and James Van Praagh (SI, September/October 2003). Physicist Donald Simanek talked about perpetual motion machines and other unworkable devices. Astronomer and retired Air Force Maj. James McGaha described a variety of UFO hoaxes and debunked the claim of the so-called (and misnamed) Area 51 having anything to do with UFOs or aliens.

Three more CSICOP Fellows rounded out the speakers. Joe Nickell, CSICOP's Senior Research Fellow and SI's Investigative Files columnist, described some of his investigations of alleged ghosts and spirits. Archaeologist and SI consulting editor Kenneth Feder (author of *Frauds, Myths, and Mysteries*) entertainingly told the story of the Cardiff Giant hoax that was a phenomenon near Syracuse, New York, in 1864. Feder's point was to show that even in a case where scientists immediately recognized a fraud, the public fell for it anyway.

And physician Wallace Sampson, editor of *The Scientific Review of Alternative Medicine*, discussed in some detail four major hoax medical claims. One was Ernest Krebs, Jr.'s Laetrile hoax (a theory Krebs invented in the Bancroft Library at Berkeley) that "completely snowed the scientific establishment. . . . It was all made up. It was very sophisticated. It was a con," Sampson said. It was also part of a stock swindle involving hundreds of millions of dollars on the Montreal Stock Exchange. Sampson said the four examples of famous scams all had major investors (several also had strong political support), all were hoaxes, all were part of alternative medicine, and all are "part of the mental state of accepting alternative medicine." □

The articles in this special, expanded issue are devoted to the theme "Science & Religion: Turmoil and Tensions." This is our third issue on science and religion. The first was in 1999, the second in 2001. Most of those articles have been collected in the book Science and Religion: Are They Compatible? *(Paul Kurtz, editor, Prometheus 2003; see page 68 for a review). As usual for SI when dealing with religious matters, most of the articles in this 2004 issue take a variety of scientific or empirical approaches to the complex issues involving science & religion.*

—KENDRICK FRAZIER

Why Is Religion Natural?

Is religious belief a mere leap into irrationality as many skeptics assume? Psychology suggests that there may be more to belief than the suspension of reason.

PASCAL BOYER

Religious beliefs and practices are found in all human groups and go back to the very beginnings of human culture. What makes religion so 'natural'? A common temptation is to search for the origin of religion in general human urges, for instance in people's wish to escape misfortune or mortality or their desire to understand the universe. However, these accounts are often based on incorrect views about religion (see table 1) and the psychological urges are often merely postulated. Recent findings in psychology, anthropology, and neuroscience offer a more empirical approach, focused on the mental machinery activated in acquiring and representing religious concepts.[1]

The first thing to understand about religion is that it does

not activate one particular capacity in the mind, a "religious module" or system that would create the complex set of beliefs and norms we usually call religion. On the contrary, religious representations are sustained by a whole variety of different systems, of which I will describe some presently. A second important point is that all these systems are parts of our regular mental equipment, religion or no religion. In other words, belief in religion activates mental systems involved in a whole variety of non-religious domains. These two points have important consequences for our understanding of why there is some kind of religion in all human cultures, why religion is so easy to acquire and transmit.

When thinking about religion, one can make a number of very tempting mistakes, some of which are summarized in table 1. Here I want to discuss one particular view of religion, popular among skeptics, that I call the "sleep of reason" interpretation. According to this view, people have religious beliefs because they fail to reason properly. If only they grounded their reasoning in sound logic or rational order, they would not have supernatural beliefs, including superstitions and religion. I think this view is misguided, for several reasons; because it assumes a dramatic difference between religious and commonsense ordinary thinking, where there isn't one; because it suggests that belief is a matter of deliberate weighing of evidence, which is generally not the case; because it implies that religious concepts could be eliminated by mere argument, which is implausible; and most importantly because it obscures the real reasons why religion is so extraordinarily widespread in human cultures.

Do not say...	But say...
Religion answers people's metaphysical questions	Religious thoughts are typically activated when people deal with concrete situations (this crop, that disease, this new birth, this dead body, etc.)
Religion is about a transcendent God	It is about a variety of agents: ghouls, ghosts, spirits, ancestors, gods, etc., in direct interaction with people
Religion allays anxiety	It generates as much anxiety as it allays: vengeful ghosts, nasty spirits and aggressive gods are as common as protective deities
Religion was created at time *t* in human history	There is no reason to think that the various kinds of thoughts we call 'religious' all appeared in human cultures at the same time
Religion is about explaining natural phenomena	Most religious explanations of natural phenomena actually explain little but produce salient mysteries
Religion is about explaining mental phenomena (dreams, visions)	In places where religion is not invoked to explain them, such phenomena are not seen as intrinsically mystical or supernatural
Religion is about mortality and the salvation of the soul	The notion of salvation is particular to a few doctrines (Christianity and doctrinal religions of Asia and the Middle East) and unheard of in most other traditions
Religion creates social cohesion	Religious commitment can (under some conditions) be used as signal of coalitional affiliation, but coalitions create social fission (secession) as often as group integration
Religious claims are irrefutable; that is why people believe them	There are many irrefutable statements that no one believes; what makes some of them plausible to some people is what we need to explain
Religion is irrational/superstitious (therefore not worthy of study)	Commitment to imagined agents does not really relax or suspend ordinary mechanisms of belief formation; indeed it can provide important evidence for their functioning (and therefore should be studied attentively)

Table 1. Do's and don'ts in the study of religion. Table 1 is taken from Boyer P. Religious thought and behavior as by-products of brain function. *Trends in Cognitive Sciences* 2003. 7(3): p. 119–124.

Religion as the "Sleep of Reason"

There is a long and respectable tradition of explaining religion as the consequence of a flaw in mental functioning. Because people do not think much or not very well, the argument goes, they let all sorts of unwarranted beliefs clutter their mental furniture. In other words, there is religion around because people fail to take prophylactic measures against beliefs, for one of the following reasons:

People are superstitious, they will believe anything. People are naturally prepared to believe all sorts of accounts of strange or counter-intuitive phenomena. Witness their enthusiasm for UFOs as opposed to scientific cosmology, for alchemy instead of chemistry, for urban legends instead of hard news. Religious concepts are both cheap and sensational; they are easy to understand and rather exciting to entertain.

Religious concepts are irrefutable. Most incorrect or incoherent claims are easily refuted by experience or logic but religious concepts are different. They invariably describe processes and agents whose existence could never be verified and are consequently never refuted. As there is no evidence against most religious claims, people have no obvious reason to stop believing them.

Refutation is more difficult than belief. It takes greater effort to challenge and rethink established notions than just accept them. Besides, in most domains of culture we just absorb other people's notions. Religion is no exception. If everyone round about you says that there are invisible dead people around, and everyone acts accordingly, it would take a much greater effort to try and verify such claims than it takes to accept them, if only provisionally.

I find all these arguments unsatisfactory. Not that they are false: religious claims are indeed beyond verification. People do like sensational supernatural tales better than banal stories and they generally spend little time rethinking every bit of cultural information they acquire. But this cannot be a sufficient explanation for why people have the concepts they have, the

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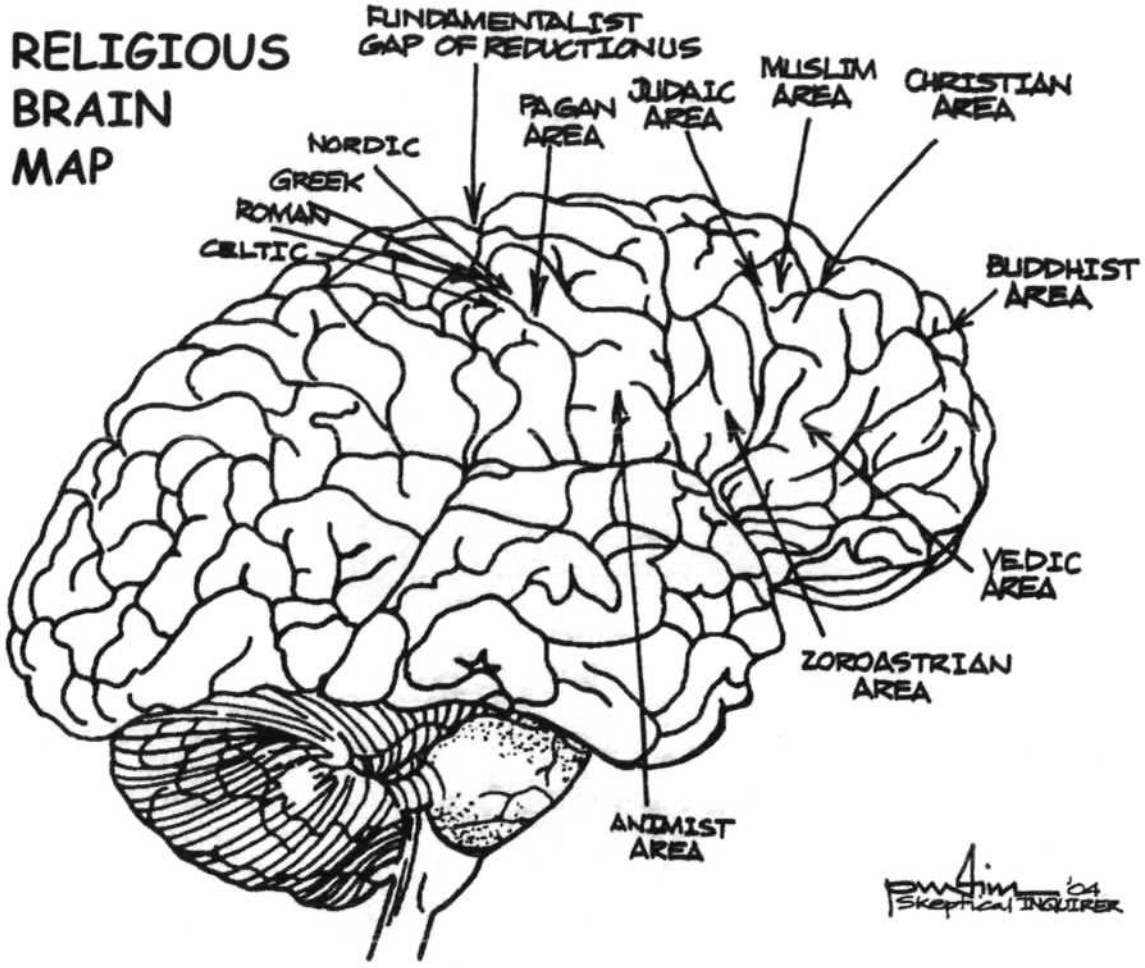


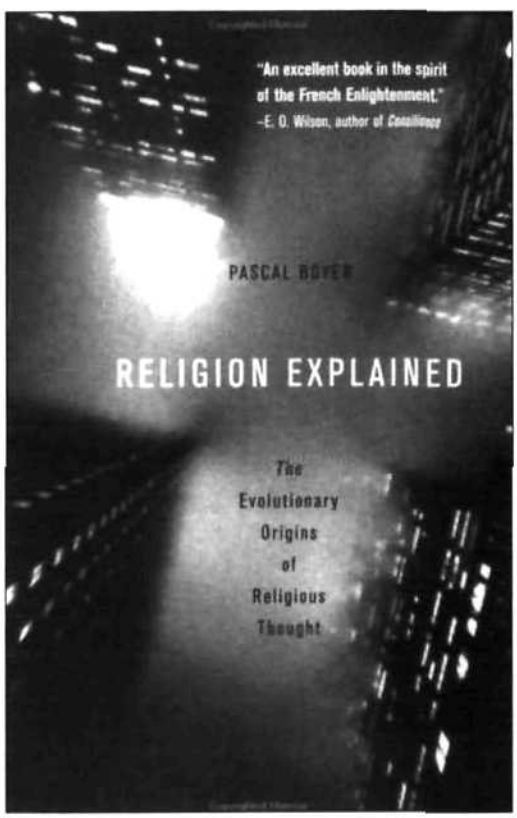
beliefs they have, the emotions they have. The idea that we are often gullible or superstitious is certainly true; but we are not gullible in just every possible way. People do not generally strive to believe six impossible things before breakfast, as does the White Queen in Lewis Carroll's *Through the Looking-Glass.* Religious claims are irrefutable, but so are all sorts of other far-fetched notions that we never find in religion. Take for instance the claim that my right hand is made of green cheese except when people examine it, that God ceases to exist every Wednesday afternoon, that cars feel thirsty when their tanks run low, or that cats think in German. I could make up hundreds of such interesting and irrefutable beliefs that no one would ever consider as a possible belief.

Religion is *not* a domain where anything goes, where any strange belief could appear and get transmitted from generation to generation. On the contrary, there is only a limited catalogue of possible supernatural beliefs. Even without knowing the details of religious systems in other cultures, we all know that some notions are far more widespread than others. The idea that there are invisible souls of dead people lurking around is a very common one; the notion that people's organs change position during the night is very rare. But both are equally irrefutable. So the problem, surely, is not just to explain how people can accept supernatural claims for which there is no strong evidence but also why they tend to represent and accept *these* particular supernatural claims rather than other possible ones. We should explain why they are so selective in the claims they adhere to.

Indeed, we should go even further and abandon the credulity-scenario altogether. Here is why: In this scenario, people relax ordinary standards of evidence for some reason. If you are against religion, you will say that this is because they are naturally credulous, or respectful of received authority, or too lazy to think for themselves, etc. If you are more sympathetic to religious beliefs, you will say that they open up their minds to wondrous truths beyond the reach of reason. But the point is that if you accept this account, you assume that people *first* open up their minds, as it were; and *then* let it be filled by whatever religious beliefs are held by the people who influence them at that particular time. This is often the way we think of religious adhesion. There is a gate-keeper in the mind that either allows or rejects visitors, that is, other people's concepts and beliefs. When the gate-keeper allows them in, these concepts and beliefs find a home in the mind and become the person's own beliefs and concepts.

Our present knowledge of mental processes suggests that

this scenario is highly misleading. People receive all sorts of information from all sorts of sources. *All* this information has some effect on the mind. Whatever you hear and whatever you see is perceived, interpreted, explained, and recorded by the various inference systems I described above. Every bit of information is fodder for the mental machinery. But then some pieces of information produce the effects that we identify as 'belief'. That is, the person starts to recall them and use them to explain or interpret particular events; they may trigger specific emotions; they may strongly influence the person's behaviour. Note that I said *some* pieces of information, not all. This is where the selection occurs. In ways that a good psychology of religion should describe, it so happens that only some pieces of information trigger these effects, and not others; it also happens that the same piece of information will have these effects in some people but not others. So people do not have beliefs because they somehow made their minds receptive to belief and then acquired the material for belief. They have some beliefs because, among all the material they acquired, some of it triggered these particular effects.


"An excellent book in the spirit of the French Enlightenment."
–E. O. Wilson, author of Consilience
PASCAL BOYER
RELIGION EXPLAINED
The Evolutionary Origins of Religious Thought

A Limited Catalogue of Concepts

Do people know what their religious concepts are? This may seem an absurd question, but it is in fact an important question in the psychology of religion, whose true answer is probably in the negative. In most domains of mental activity, only a small part of what goes on in our brains is accessible to conscious inspection. For instance, we constantly produce grammatical sentences in our native tongue with impeccable pronunciation, often without any idea how this is done. Or we perceive the world around us as made up of three-dimensional objects, but we are certainly not aware of the ways in which our visual cortex transforms two retinal images into this rich impression of solid objects out there. The same goes for all our concepts and norms. We have some notion of what they are, but we certainly do not have full access to the way our minds create and sustain them. Most of the relevant mental machinery that sustains religious concepts is not consciously accessible.

People's explicitly held, consciously accessible beliefs, as in other domains of cognition, only represent a fragment of the relevant processes. Indeed, experimental tests show that people's actual religious concepts often diverge from what they believe they believe. This is why theologies, explicit dogmas, scholarly interpretations of religion cannot be taken as a reliable description of either the contents or the causes of people's beliefs. For instance, psychologist Justin Barrett showed that Christians' concept of God was much more complex than the believers themselves assumed. Most Christians would describe their notion of God in terms of transcendence and extraordinary physical and mental characteristics. God is everywhere, attends to everything at the same time. However, subtle experimental tasks reveal that, when they are not reflecting upon their own beliefs, these same people use another concept of God, as a human-like agent with a particular viewpoint, a particular position and serial attention. God considers one problem and then another. Now that concept is mostly tacit. It drives people's thoughts about particular events, episodes of interaction with God, but it is not accessible to people as "their belief." In other words, people do not believe what they believe they believe.[2]

A systematic investigation of these tacit concepts reveals that notions of religious agency, despite important cultural differences, are very similar the world over. There is a small repertoire of possible types of supernatural characters, many of whom are found in folktales and other minor cultural domains, though some of them belong to the important gods or spirits or ancestors of "religion." Most of these agents are explicitly defined as having counterintuitive physical or biological properties that violate general expectations about agents. They are sometimes undetectable, or prescient, or eternal. The way people represent such agents activates the enormous but inaccessible machinery of "theory of mind" and other mental systems that provide us with a representation of agents, their intentions and their beliefs. All this is inaccessible to conscious inspection and requires no social transmission. On the other hand, what is socially transmitted are the counterintuitive features: this one is omniscient, that one can go through walls, another one was born of a virgin, etc.

More generally, we observe that most supernatural and religious concepts belong to a short catalogue of possible types of templates, with a common structure. All these concepts are informed by very general assumptions from broad categories such as *person*, *living thing*, or *man-made object*. A spirit is a special kind of person, a magic wand a special kind of artifact, a talking tree a special kind of plant. Such notions combine (i) specific features that violate some default expectations for the domain with (ii) expectations held by default as true of the entire domain. For example, the familiar concept of a *ghost* combines (i) socially transmitted information about a physically

counterintuitive person (disembodied, can go through walls, etc.), and (ii) spontaneous inferences afforded by the general person concept (the ghost perceives what happens, recalls what he or she perceived, forms beliefs on the basis of such perceptions, and intentions on the basis of beliefs).

These combinations of explicit violation and tacit inferences are culturally widespread and may constitute a memory optimum. Associations of this type are recalled better than more standard associations but also better than oddities that do not include domain-concept violations. The effect obtains regardless of exposure to a particular kind of supernatural beliefs, and it has been replicated in different cultures in Africa and Asia.

To sum up, we can explain human sensitivity to particular kinds of supernatural concepts as a by-product of the way human minds operate in ordinary, non-religious contexts. Because our assumptions about fundamental categories like *person, artifact, animal*, etc., are so entrenched, violations of these assumptions create salient and memorable concepts.

Exchange, Morality, and Misfortune

We can understand other aspects of religious concepts as by-products of these ordinary, non-religious mental systems that organize our everyday experience. For instance, consider the fact that in all human cultures, a great deal of attention is focused, not so much on the characteristics of supernatural agents, as on their interaction with the living. This is visible in the constant association between moral judgments and supernatural agency, as well as in the treatment of misfortune and contingency.

Developmental research shows the early appearance and systematic organization of moral intuitions: a set of precise feelings evoked by the consideration of actual and possible courses of action. Although people often state that their moral rules are a consequence of the existence (or of the decrees) of supernatural agents, it is quite clear that such intuitions are present, independent of religious concepts. Moral intuitions appear long before children represent the powers of supernatural agents, they appear in the same way in cultures where no one is much interested in supernatural agents, and in similar ways regardless of what kind of supernatural agents are locally important. Indeed, it is difficult to find evidence that religious teachings have any effect on people's moral intuitions. Religious concepts do not change people's moral intuitions but frame these intuitions in terms that make them easier to think about. For instance, in most human groups supernatural agents are thought to be *interested parties* in people's interactions. Given this assumption, having the intuition that an action is wrong becomes having the expectation that a personalized agent disapproves of it. The social consequences of the latter way of representing the situation are much clearer to the agent, as they are handled by specialized mental systems for social interaction. This notion of gods and spirits as interested parties is far more salient in people's moral inferences than the notion of these agents as moral legislators or moral exemplars.

In the same way, the use of supernatural or religious explanations for misfortune may be a byproduct of a far more general tendency to see all salient occurrences in terms of social interaction. The ancestors can make you sick or ruin your plantations; God sends people various plagues. On the positive side, gods and spirits are also represented as protectors, guarantors of good crops, social harmony, etc. But why are supernatural agents construed as having such causal powers?

We can explain human sensitivity to particular kinds of supernatural concepts as a by-product of the way human minds operate in ordinary, non-religious contexts.

One of the most widespread explanations of mishaps and disorders, the world over, is in terms of witchcraft, the suspicion that some people (generally in the community) perform magical tricks to "steal" other people's health, good fortune, or material goods. Concepts of witches are among the most widespread supernatural ones. In some places there are explicit accusations and the alleged witches must either prove their innocence or perform some special rituals to pay for their transgression. In most places the suspicion is a matter of gossip and rarely comes out in the open. You do not really need to have actual witches around to have very firm beliefs about the existence and powers of witches. Witchcraft is important because it seems to provide an "explanation" for all sorts of events: many cases of illness or other misfortune are spontaneously interpreted as evidence for the witches' actions. Witchcraft beliefs are only one manifestation of a phenomenon that is found in many human groups, the interpretation of misfortune as a consequence of envy. For another such situation, consider the widespread beliefs in an "evil eye," a spell cast by envious people against whoever enjoys some good fortune or natural advantage. Witchcraft and evil eye notions do not really belong to the domain of religion, but they show that, religious agents or not, there is a tendency to focus on the possible reasons for some agents to cause misfortune, rather than on the processes whereby they could do it.

For these occurrences that largely escape control, people focus on the supernatural agents' feelings and intentions. The ancestors were angry, the gods demanded a sacrifice, or the god is just cruel and playful. But there is more to that. The way these reasons are expressed is, in a great majority of cases, supported by our *social exchange* intuitions. People focus on an agent's reasons for causing them harm, but note that these "reasons" always have to do with people's *interaction* with the agents in question. People refused to follow God's orders; they polluted a house against the ancestors' prescriptions; they had more wealth or good fortune than their God-decreed fate allocated them; and so on. All this supports what anthropologists have been saying for a long time on the basis of evidence gathered in the most various cultural environments: Misfortune is generally interpreted in *social* terms. But this familiar conclusion implies that the evolved cognitive resources people bring to the understanding of interaction should be crucial to their construal of misfortune.

Social interaction requires the operation of complex mental systems: to represent not just other people's beliefs and their intentions, but also the extent to which they can be trusted, the extent to which they find us trustworthy, how social exchange works, how to detect cheaters, how to build alliances, and so on. These mental systems are largely inaccessible, only their output is consciously represented. Now interaction with supernatural agents, through sacrifice, ritual, prayer, etc., is framed by those systems. Although the agents are said to be very special, the way people think about interaction with them is directly mapped from their interaction with actual people.

Precaution, Ritual, and Obsession

Magic and ritual the world over obsessively rehash the same themes, in particular "concerns about pollution and purity [...] contact avoidance; special ways of touching; fears about imminent, serious sanctions for rule violations; a focus on boundaries and thresholds."[3] Anthropologists have long documented, not just these particular themes of magical and ritual thinking, but also the more abstract principles that organize them: (1) dangerous elements or substances are invisible; (2) any contact (touching, kissing, ingesting) with such substances is dangerous; (3) the amount of substance is irrelevant (e.g., a drop of a sick person's saliva is just as dangerous as a cupful of the stuff).[4]

People spontaneously apply these principles in situations of potential contact with sources of pathogens and toxins: dirt, faeces, rotten food, bugs, diseased or decayed organisms. The three principles are particularly apposite when dealing with such situations, as most pathogens are invisible, use diverse vectors for transmission, and there is no dose effect. So it may be that "magical" thoughts are an extension of non-magical inferences about possible sources of contagion.[5] In this sense, many intuitions about magical "pollution," "defilement," etc., simply hijack, as it were, cognitive resources used in non-symbolic, non-religious domains.

More generally, rituals are usually performed with a sense of urgency, an intuition that great danger would be incurred by not performing them. These themes are also characteristic of obsessive-compulsive disorders (OCD). As many anthropologists and psychologists have noted, the themes of ritual, as summarized above, and those of personal pathological obsessions are almost exactly similar. The particular emotional tenor of rituals might derive from their association with neural systems dedicated to the detection and avoidance of invisible hazards. Neuroimaging studies of OCD patients generally show a significant increase of activity in cortical and limbic areas dedicated to the processing of danger signals.[6] So the pathology might consist in a failure to inhibit or keep 'off-line' a set of normal neural reactions to potential sources of danger. We are still far from understanding to what extent this network is also involved in the production of "mild," controlled, socially transmitted notions about purity and the need for magical ritual. But it seems that the salience of a particular range of ritual themes to do with hidden danger and noxious contact and a susceptibility to derive rigid, emotionally vivid sequences of compulsory actions from such themes, may be spectacular cultural by-products of neural function.

Rituals are usually performed with a sense of urgency, an intuition that great danger would be incurred by not performing them. These themes are also characteristic of obsessive-compulsive disorders.

What Makes Religion "Natural"

For lack of space, I cannot pursue this list of the mental systems (usually activated in non-religious contexts) that sustain the salience and plausibility of religious notions. To be exhaustive, one should also mention the close association between ritual participation and group affiliation, the role of our coalitional thinking in creating religious identity, the specific role of death

and dead bodies in religious thinking, and many other aspects of religion. Psychological investigation into these domains reveals the same organization described above. A variety of mental systems, functionally specialized for the treatment of particular (non-religious) domains of information, are activated by religious notions and norms, in such a way that these notions and norms become highly salient, easy to acquire, easy to remember and communicate, as well as intuitively plausible.

The lesson of the cognitive study of religion is that religion is rather "natural" in the sense that it consists of by-products of normal mental functioning. Each of the systems described here (a sense for social exchange, a specific mechanism for detecting animacy in surrounding objects, an intuitive fear of invisible contamination, a capacity for coalitional thinking, etc.) is the plausible result of selective pressures on cognitive organization. In other words, these capacities are the outcome of evolution by natural selection.

In other words, religious thought activates cognitive capacities that developed to handle non-religious information. In this sense, religion is very similar to music and very different from language. Every normal human being acquires a natural language and that language is extraordinarily similar to that of the surrounding group. It seems plausible that our capacity for language acquisition is an adaptation.[8] By contrast, though all human beings can effortlessly recognize music and religious concepts, there are profound individual differences in the extent to which they enjoy music or adhere to religious concepts. The fact that some religious notions have been found in every human group does not mean that all human beings are naturally religious. Vast numbers of human beings do without it altogether, like for instance the majority of Europeans for several centuries.

Is religion "in the genes," and could it be considered a result of natural selection? Some evolutionary biologists think that is so, because the existence of religious beliefs may provide some advantages for individuals or groups that hold them. The evidence for this is, however, still incomplete. It may seem more prudent and empirically justified to say that religion is a very probable byproduct of various brain systems that are the result of evolution by natural selection.

Can We Reason Religion Away?

Taking all this into account, it would seem that the "sleep of reason" interpretation of religion is less than compelling. It is quite clear that explicit religious belief requires a suspension of the sound rules according to which most scientists evaluate evidence. But so does most ordinary thinking, of the kind that sustains our commonsense intuitions about the surrounding environment. More surprising, religious notions are not at all a separate realm of cognitive activity. They are firmly rooted in the deepest principles of cognitive functioning. First, religious concepts would not be salient if they did not violate some of our most entrenched intuitions (e.g., that agents have a position in space, that live beings grow old and die, etc.). Second, religious concepts would not subsist if they did not confirm many intuitive principles. Third, most religious norms and emotions are parasitic upon systems that create very similar norms (e.g., moral intuitions) and emotions (e.g., a fear of invisible contaminants) in non-religious contexts.

In this sense, religion is vastly more "natural" than the "sleep of reason" argument would suggest. People do not adhere to concepts of invisible ghosts or ancestors or spirits because they *suspend* ordinary cognitive resources, but rather because they use these cognitive resources in a context for which they were not designed in the first place. However, the "tweaking" of ordinary cognition that is required to sustain religious thought is so small that one should not be surprised if religious concepts are so widespread and so resistant to argument. To some extent, the situation is similar to domains where science has clearly demonstrated the limits or falsity of our common intuitions. We now know that solid objects are largely made up of empty space, that our minds are only billions of neurons firing in ordered ways, that some physical processes can go backwards in time, that species do not have an eternal essence, that gravitation is a curvature of space-time. Yet even scientists go through their daily lives with an intuitive commitment to solid objects being full of matter, to people having non-physical minds, to time being irreversible, to cats being essentially different from dogs, and to objects falling down because they are heavy.

In a sense, the cognitive study of religion ends up justifying a common intuition, best expressed by Jonathan Swift's dictum that "you do not reason a man out of something he was not reasoned into." The point of studying this scientifically is to show to what extent we can expect religious notions to be stable and salient in human cultures, not just now but for a long time to come.

Passages in the first part of the article are modified from Chapter 1 of Boyer, P., Religion Explained: Evolutionary Origins of Religious Thought, *2001, New York, Basic Books.*

Notes

1. Boyer, P. 2001. *Religion Explained: Evolutionary Origins of Religious Thought.* New York: Basic Books, 403.

2. Barrett, J.L., and F.C. Keil. 1996. Conceptualizing a nonnatural entity: Anthropomorphism in God concepts. *Cognitive Psychology* 31(3): 219–247.

3. Dulaney, S., and A.P. Fiske. 1994. Cultural rituals and obsessive-compulsive disorder: Is there a common psychological mechanism? *Ethos* 22(3): 243–283.

4. Nemeroff, C.J. 1995. Magical thinking about illness virulence: Conceptions of germs from "safe" versus "dangerous" others. *Health Psychology* 14(2): 147–151.

5. Cosmides, L., and J. Tooby. 1999. Toward an evolutionary taxonomy of treatable conditions. *Journal of Abnormal Psychology* 108(3): 453–464.

6. Rauch, S.L., et al., 2001. Probing striato-thalamic function in obsessive-compulsive disorder and Tourette syndrome using neuroimaging methods. *Advances in Neurology* 85: 207–24.

7. Fiske, A.P., and N. Haslam. 1997. Is obsessive-compulsive disorder a pathology of the human disposition to perform socially meaningful rituals? Evidence of similar content. *Journal of Nervous & Mental Disease* 185(4): 211–222.

8. Pinker, S. 1995. *The Language Instinct.* 1st HarperPerennial ed. New York: HarperPerennial, 494. □

Skeptical Inquiry and Religion

The contemporary skeptical movement (including CSICOP) has traditionally focused on the claims of the paranormal. We have made great strides in explaining such phenomena. Skeptics need to apply similar skeptical inquiry to religious claims—which I call para*natural. We have in recent years explained reports of current "miracles" in naturalistic terms. Skeptical inquirers, I submit, need to re-examine historic religious claims as well. Ethical objections to the scientific examination of religious claims ought not to preclude their scrutiny. Moreover, science can often provide naturalistic ethical alternatives.*

PAUL KURTZ

What is the relationship between skepticism and religion? Can we apply the methods of skeptical inquiry to its claims? Contemporary skepticism rose out of, and is related to, scientific inquiry and is not primarily a philosophical movement, as it was in ancient Greece and Rome. Contemporary scientific skeptics have concentrated the lion's share of their attention in recent decades to the claims of the paranormal; that is, to areas of human interest which allegedly could not be dealt with in terms of the existing scientific paradigm: parapsychology, astrology, aspects of UFOlogy, alternative medicine, monsters of the deep, urban legends, communication with the dead, etc.

Charles Fort proclaimed forthrightly that there were anomalies, strange or unusual phenomena that were usually ignored by science, for they did not render easy explanation. Science focuses on uniformities, not irregularities. Skeptics were accused, improperly I think, of doubting such anomalies on *a priori* grounds as impossible or improbable, without bothering to investigate them. Such a posture indeed would be dogmatic and negative. Skepticism is a *method* of inquiry primarily, not an attitude or posture or philosophical viewpoint that denies entities or phenomena out of hand.

The skeptical critics of the paranormal attempted to use the best empirical and analytical methods of investigation. Generally they were able to provide alternative naturalistic explanations for what had seemed totally mysterious. Some paranormalists rejected these explanations. They derided Phillip J. Klass, for example, for providing possible scenarios of alleged UFO phenomena, claiming that they were contrived; and they attacked the skeptical critics of Gauquelin's so-called astrobiology, accusing them of bias. On the whole, skeptics found that paranormal phenomena, when submitted to vigorous experimental testing, could be explained by prosaic causes. Skeptics discovered that the tests designed by believers often were not rigorous, that their protocol was loose, that eyewitness testimony was unsubstantiated, that there was experimental bias, poor statistical analyses, and even outright fraud. Parapsychological inquirers benefited, I submit, from these skeptical critiques; similarly for those sympathetic to astrology and UFOlogy. For the alleged paranormal phenomena were transformed into the normal; once empirical scrutiny was applied to them, it was discovered that they could be accounted for. Scientists could claim with reason that they were skeptical, for having investigated paranormal phenomena they eventually came to doubt their veracity.

Interestingly, contemporary skeptics were reluctant to apply similar skeptical critiques to religious claims, and for a variety of reasons. For one, many of these claims are dependent upon faith, and were held for deeper psychological or sociological reasons, or even rooted in philosophical or theological arguments. The grounds for the claims were often shrouded by the sands of historical time, and the epistemological justifications for the beliefs were not easily discernible. Unlike paranormal claims the major religious creeds were institutionalized, enforced by the tradition and the power of the church and/or state. Accordingly, it became highly dangerous to make inferences about revered historical claims and to question the sacred cows. For in doing so, one was shaking at the very foundations of the social structure, and philosophers and scientists from Socrates and Spinoza, to Bruno and Galileo, encountered strong resistance from ecclesiastical and political authorities. It is entirely different to criticize astrologers, psychics, and UFOlogists, for they have little institutional power, and their claims were often relegated to the sideshow. Who cares if Champ, Bigfoot, the Bermuda Triangle, and other popular media-driven legends were true or false? It was fun and games, a form of entertainment or circus. People enjoyed listening to the proponents, for those who believed in the claims, and their opponents—especially the magicians who could duplicate their tricks. It was all part of *showbiz!*

In the last decade the skeptical movement has, in spite of the earlier disclaimers, turned to religious questions. I am referring to the reports of miracles, faith healers, visitations by angelic or demonic beings, ghosts or goblins, or contact with dearly departed friends and relatives. I have characterized these phenomena as *paranatural*, for like the paranormal they could be investigated empirically. Did people actually see a vision of the Virgin Mary in Medjugorje, Yugoslavia? Were the prophesies relayed to the children who had this vision later confirmed? Were people actually cured by miracles at Lourdes? What about the claims of faith healers? We could diagnose such claims beforehand, by examining the medical records that are available, and afterwards by follow-up studies. There are also historical artifacts that can be investigated: Was the Shroud of Turin Jesus' burial cloth? We could engage in carbon 14 dating, and the image on the shroud could be duplicated. Similarly for the alleged ossuary of James, the brother of Jesus, recently discovered and found to be a forgery. All of these used science to test their veracity.

There is, however, a range of core beliefs of religious faith that many devotees believed were immune to skeptical inquiry. Did Jesus raise Lazarus from the dead? Did he affect miraculous cures and exorcisms, as the New Testament relates? But more centrally, was Jesus himself resurrected from the dead? Were the Ten Commandments actually delivered by Moses to the children of Israel? Did Mohammed receive visitations from Gabriel, the angel of Allah? Is the Koran an accurate rendition of this divine messenger? Did Joseph Smith receive the golden plates from the Angel Moroni, as claimed in the Book of Mormon? Here of course we are dealing with the claims of revelation, which are framed in concrete empirical terms and open to examination. In this sense they likewise are paranatural, and in principle at least such revelatory reports could be examined much as other natural historical events, such as: Did three hundred Spartans under King Leonidas attempt to hold off a vast Persian army at the gate of Thermopolae in 480 B.C.? Were the Roman emperors descended from the Gods? Did Constantine see a divine omen, or was this explicable in astronomical terms?

If a person claiming to be a prophet came forth today delivering divinely inspired revelations, we could, of course, submit him or her to careful scrutiny, asking for corroboration. We would submit such extraordinary historical claims to the best available tools of circumstantial evidence. Of course, it is often difficult to ascertain the reliability of historical claims, since the factual data may be lost, and, at best, only fragmentary evidence may have survived. The field of Biblical, Koranic, and

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Mormonic criticism is putatively amenable to skeptical scientific inquiry. Investigators can use the established methods of science: linguistic analysis, archaeological corroboration, carbon-14 dating, the examination of other documents of alleged eyewitnesses that are available, etc. This means that the historical reconstruction of past claims, whether natural or paranatural, are open to careful checking; that is, if some extant evidence could be recovered; if none, then the only response is that of the agnostic, though many would shy away from this posture.

There has been widespread reluctance historically to engage in such inquiries, since they were considered dangerous to the Faith. But after two centuries or more of meticulous scientific and scholarly criticism, there is a substantial literature that questions the received doctrines. Proponents of the Faith do not wish it questioned by agnostics or apostates. It is still considered in bad taste to be skeptical about these claims in America today; and indeed dangerous to one's health in other parts of the world where scientific inquiry is often considered blasphemous. "Yours is to believe or die," is the old adage, and thus to question revered beliefs is an egregious crime, liable to provoke an Inquisition or a *fatwa*.

There is of course an historic theological-philosophical debate of the case, pro and con. While this is important and intriguing, we are dealing here primarily with *arguments*, not evidence for or against the existence of the God of revelation. The God of the philosophers or theologians is not the same as the God of revelation; for the latter is a question of historical fact. Clearly, I believe that scientific-historical inquiry by skeptics is important; believers are apt to be biased *a priori* in favor, and they allow their faith commitments to intrude. We need independent, reliable skeptical inquiry into these basic questions, especially since such historical claims have a powerful effect on the contemporary world. We are not here raising idle abstract questions, but those which have a profound influence on human behavior. I submit that no matter what the danger, skeptical inquiry can and should be applied to such religious claims.

The key point about this form of skepticism that has developed, I reiterate, is that it cannot be equated simply with *a priori* doubt, but rather with *inquiry* and the quest for reliable knowledge.

Science itself incorporates the methodology of skeptical inquiry into the very process of discovery. Namely, scientists must be prepared to doubt hypotheses or theories unless or until they are verified or tested by predictions; and/or are consistent with other well-tested theories. Objective peer review is an essential ingredient in the process of questioning any aspect of the prevailing paradigm and seeking to overturn it by more parsimonious and/or elegant-tested theories. Science is thus *fallible*; and doubting is intrinsic to its inquiries. However, the goal is not to debunk, but to achieve *reliable knowledge*. This is constructive and positive, not negative or destructive; and it has moral significance. The quest for truth is ongoing and should apply to every area of human interest.

But in religion many worry this may have negative consequences for cherished beliefs and values. The hidden premise of those who object to scientific inquiry into the paranatural claims of religious beliefs often is their fear that such inquiries may be destructive of traditional social institutions. Yet is there not some moral imperative that human beings apply skeptical inquiry to religious claims, in order to ascertain which are true or false? For religious claims are often competing and contradictory, and they can be a source of intense conflict. To shake at the foundations of belief, insists the believer, may leave people in a hopeless quandary. But need it? If a person finds that the historical evidence for the truth of X in whom he has an abiding faith is unreliable, what would this do to the entire framework of ethical and social beliefs that he values, and what effect will this have on the institutional forms that have been developed to sustain them? Would skeptical inquiry into the foundations or religious belief thus undermine the entire deck of cards that we have piled high?

We need independent, reliable skeptical inquiry into these basic questions. We are not here raising idle abstract questions, but those which have a profound influence on human behavior. I submit that no matter what the danger, skeptical inquiry can and should be applied to such religious claims.

Should skeptical scientific inquiries be concerned with the ethical implications of their considered doubts reached after a process of inquiry? The dilemma posed today is: If skeptical inquiry shakes at the foundations of traditional religious belief, might it not undermine the entire fabric of beliefs and values? When this happens, can science and reason be applied to ethics and values to help us find rational alternatives?

I submit that many ethical questions may indeed be resolved by scientific inquiry. Ethical principles do not in all cases depend upon religion, nor do they require a supernatural and/or occult foundation. For example, the applied sciences frame value judgments all the time, in engineering, architecture, the practice of medicine, psychiatry, economics, politics, and education. Thus scientific or skeptical inquiry into religious beliefs need not lead to moral collapse or nihilism, for there are alternative systems of ethics that we may find both reasonable and viable, independent of appeals to faith or authority. How and to what extent this is possible is a topic, I submit, that the skeptical community needs to address. □

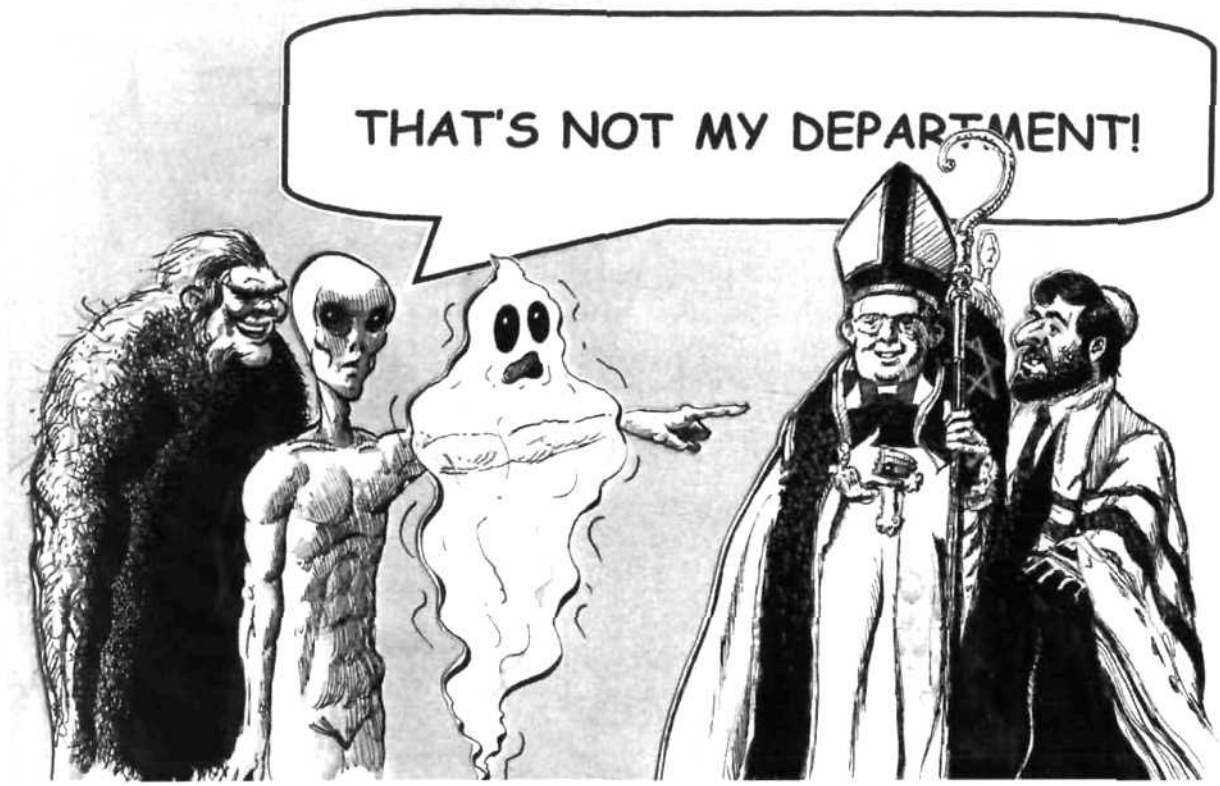
Exorcising *All* the Ghosts

Should skepticism about the paranormal extend to all supernatural beliefs? The examples of parapsychology and "intelligent design" creationism show that skeptical critiques often undermine religious claims of much broader significance.

TANER EDIS

Skeptics of paranormal claims usually try to debunk weird stories. If we come upon a poltergeist tale, we try to see if it fits the pattern of a teenager fooling the surrounding adults. Casting a doubting eye over séances, we might get involved with claims about life after death. Or we might take on fundamentalism when defending biology against creationists. But we are reluctant to set forth a larger view of the world, to mess with religion in any deeper way. Plenty of fringe-science matters—Bigfoot, alien spaceships, homeopathy—have little to do with whether any supernatural reality exists.

Nevertheless, questions about religion regularly arise in skeptical circles. SKEPTICAL INQUIRER issues about science



Gerald Fried

and religion are very popular. After all, why should we deny that spirits haunt houses, but stop when it comes to gods and demons? What makes God, the ghost in the universe, immune to skeptical criticism?

There are plenty of practical reasons a skeptical organization might have to keep away from explicitly religious debates (Kurtz 1999). There might even be an important intellectual difference between skepticism about ghosts and about the gods. Plenty of skeptics and scientists argue that religion is not about empirically testable realities, perhaps because, if understood properly, religion is only concerned with issues of morality and meaning (Gould 1999). Paranormal skepticism, in turn, should be limited to testable claims.

Trying to nail down a satisfactory definition of either science or religion and then drawing a clear boundary to separate them is, however, a dubious task. Finding a sharp philosophical distinction between science and nonscience does not seem feasible, however much skeptics like to invoke falsificationist ideas. And religion, for its part, is too broad an enterprise to confine to moral philosophy. Even the most liberal of religions present us with an anthropocentric view of the world, where deep down, the nature of reality is itself mindlike or in some way answers to deep human needs (Guthrie 1993). Our sciences have much to say about such claims (Edis 2002), and criticism of the paranormal also plays a role.

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Paranormal beliefs do not arise arbitrarily; they are almost always similar to supernatural ideas found in religions worldwide. We do not encounter any bizarre belief about, say, our internal organs rearranging themselves while we sleep (Boyer 2001). But even many fringe beliefs that do not appear supernatural, such as in alien visitors, quickly develop religious overtones; tales of alien abductions in the night blend into classic tales of visitations from higher spiritual realms (Lewis 1995). So criticism of paranormal and fringe-science claims very often engages deeply religious themes. Even when dissatisfaction with mainstream science is a driving force behind a fringe belief, the reason for this resentment is usually that modern science has demystified the world, driving away the supernatural.

This is not to say that critiques of the paranormal are automatically also criticisms of religion. Even if God is the biggest paranormal claim of all, just because it is such a grandiose claim, an adequate critique has to touch on all aspects of our knowledge about the world—it cannot be just another debunking enterprise. However, it is also true that skepticism is more than an enterprise of declaring that there is insufficient evidence for extraordinary claims. We make such judgments against a background of "normal" knowledge, of the strange but naturalistic world portrayed by modern science. Skepticism involves positive claims about the nature of our world, and it is but a small stretch from these to a comprehensive naturalism with no ghosts, big or small.

Let us see how this applies in the context of two of the major paranormal and fringe-science claims of our day: parapsychology and intelligent design creationism.

Parapsychology

From its beginnings in the nineteenth century, psychical research has been a quasi-scientific quest for the soul, a defense against encroaching materialism (Oppenheim 1985). Our religions usually picture a hierarchical, top-down world where a nonmaterial mind acts from above and gives shape to mere matter. So the notion of a soul or some sort of consciousness beyond the brain that can act on matter has always been prominent in the parapsychological imagination.

Parapsychology can also be understood in more neutral terms as an investigation of consciousness-related anomalies. However, parapsychologists are very selective about the anomalies they care about. Consciousness has plenty of mysteries, enough to keep cognitive and brain scientists busy for many centuries yet. But parapsychologists do not try to explain vision or attention or awareness; they chase after bent spoons and precognitive dreams. Psychic phenomena are interesting precisely because, if real, they would force us to refer to spiritual realities in explaining our world.

The connection between psi and religion becomes clearer in some contemporary theology. Liberal religions typically avoid conflict with science; indeed, in political battles over evolution in education, liberal clergy are the best allies of scientists. However, it is not unusual to find liberal theologians who are sympathetic to parapsychology, hoping it can provide a way to transcend a narrowly naturalistic view of the world (Stoeber and Meynell 1996, Griffin 1997). Psychic phenomena allow religious philosophers to talk of minds independent of brains, of "agent causation" from above, of an anthropomorphic world in which *meaning* is the fundamental reality.

Skeptic or true believer, most of us claim to base our views of psi on the evidence rather than on its religious implications. Gary Schwartz, for example, has recently claimed to experimentally demonstrate that some mediums have communicated with the dead (Schwartz 2002). Critics have responded, pointing out that Schwartz's tests easily allowed cheating (Randi 2001), and that his work does not fit the requirements of good experimental methodology (Hyman 2003).

In fact, skeptical critiques most often follow these lines. If the evidence in question is the spectacular performances of a superpsychic, a magician such as James Randi can be very effective in detecting cheating and in producing similar effects through conjuring techniques. If, on the other hand, the evidence consists of laboratory studies presenting small but statistically highly significant deviations from chance expectations, an experimental psychologist such as Ray Hyman can often produce a detailed technical and methodological critique to explain why these results cannot be taken at face value.

In either case, critics point out how reports of psychic phenomena *do not stand out* from among the ordinary mistakes and hard-to-explain happenings that we expect to see in a unmagical but complicated world. When a magician duplicates a spectacular performance by a psychic, we do not necessarily find out exactly how the psychic performed his feat, but we see that it is very likely a trick. Similarly, the statistical miracles of laboratory parapsychologists do not stand out. While they report very high statistical significances, identifying what are almost certainly deviations from chance expectations, their effect size is typically very small. As even physical scientists who have the luxury of studying very simple systems know very well, doing experiments is dirty work. We can never control everything, or anticipate all possible sources of error. So marginal effect sizes are never impressive (Edis 2002).

This helps us understand the importance of naturalistic "normal" background expectations when debating the evidence for psi. A psychic miracle is negatively defined: it is what violates these expectations. However, in a complex world, this background is considerably fuzzier than the precise 50 percent we might compute as the chance expectation for a coin flip. So a psychic guessing right 80 percent of the time under reasonably controlled conditions is much more likely to be demonstrating a true miracle than one who manages only 51 percent. And a skeptic examining a report of 51 percent success—better than chance!—need not find the precise flaw in the experimental design, or figure out how exactly trickery may be taking place. It is enough to note that the result does not stand out against the kind of deviations from 50 percent we can get in ordinary circumstances.

Much the same is true when we consider strange experiences that we are regularly tempted to classify as paranormal events. Near-death experiences, spirit possession, past-life memories, and many other peculiar phenomena suggest a disembodied spirit as an obvious explanation. But as we learn more about mainstream psychology and about our brains, such phenomena no longer stand out in a naturalistic world. When confronted with the claim that such experiences are supernatural, skeptics need not stop at declaring these claims unproven. We do not know everything we would like about NDEs or about how hypnotherapy helps construct false memories. But we know enough to be confident that there is nothing magical about them; they are fascinating phenomena that can teach us a lot about our brains rather than about a spirit realm.

Indeed, a very good reason to remain skeptical of psi, over and above the success of any debunking efforts, is what we have learned about our brains and our very much embodied minds (Beyerstein 2001). If psychical research is a quest for the soul, then there is less and less for a soul to do these days. And since parapsychology is the most prominent research program seeking evidence of a spirit realm, the failure of parapsychology further strengthens the case that our minds—awareness, intelligence, emotions, the works—are products of physical brains and no more.

In that case, paranormal skepticism gives us powerful reasons to doubt the existence of any supernatural reality. Religious views of our world are top-down, where mind is the creative force giving shape to matter. Our gods and demons are personal beings; our religions imagine that down deep, reality is fundamentally personal. If we cannot find magic even in our minds, it becomes hard to avoid the conclusion that we live in a bottom-up, naturalistic world.

Intelligent Design

Another major dispute at the fringes of science also involves

themes of soul and spirit. Intelligent design, a new version of creationism that avoids blatantly sectarian claims like a young Earth, attacks Darwinian evolution by claiming that only a designing intelligence could be responsible for the complex information embodied by living organisms (Behe 1996, Dembski 1999).

The endless war between creation and evolution may appear to be a clear example of a conflict between science and religion. However, it also exemplifies harmony between science and liberal religion. Skeptics defending mainstream biology depend on the support of liberal clergy. Religions that are flexible in interpretation, and are more focused on moral concerns than on strict doctrines, get along with science much better than their fundamentalist cousins.

Intelligent design advocates, however, try to appeal to a broader base than just fundamentalists. They are preoccupied with biology only because Darwinian evolution is central to the task of explaining complexity and creativity by purely natural means. The core ideas of the intelligent design movement are common to many religious traditions; complexity is ultimately due to design, intelligence is a separate principle beyond chance and necessity, and matter is given shape from above by minds not reducible to mere mechanisms (Dembski and Kushiner 2001). Like parapsychology, intelligent design is a defense of the soul; it just emphasizes intelligence rather than a mystical consciousness. It stands against research in artificial intelligence and the physics of complexity as much as it denounces Darwinian evolution.

From an intelligent design perspective, the problem with evolution is not so much the idea that humans and cockroaches share a common ancestor as the notion that evolution is driven by nothing but mindless mechanisms (Behe 1996, Dembski 2002). Intelligent design argues that Darwinian variation and selection cannot be truly creative, that complex information comes from intelligence alone.

Old-fashioned creationists agree, naturally. But even liberal religious thinkers who vigorously affirm the common descent of organisms often engage in vague speculations about information being infused into our world by a divine intelligence (Polkinghorne 1998, Haught 2000). Intelligent design proponents differ only in being much more concrete—they say they have scientific evidence or even mathematical proof of their claims.

We can find much to make us suspect intelligent design is not a legitimate scientific enterprise. The quality of intelligent design "evidence" is barely a cut above that of old-fashioned creationism, and it has led to no real research accomplishments—only plenty of popular and political posturing. Even so, it is not enough for skeptics to just rule intelligent design out of bounds. The best case against creationism has never come from consulting philosophical checklists laying down the properties of a pseudoscience but rather from seeing how wonderfully evolution succeeds in explaining life (Edis 1998, Martin and Martin 2003). And with intelligent design, we need to address the very legitimate question of how we can create information through chance and necessity.

Fortunately, we have a good answer. We *know* how Darwinian mechanisms can create new information. Moreover, Darwinian thinking is no longer confined to biology. Most important, cognitive science and artificial intelligence research today recognizes Darwinian mechanisms as vital components of our own intelligence. So a skeptic criticizing intelligent design creationism can point out not just that the history of life does not require intervention by a supernatural designer, but also that intelligence itself is fully part of the natural world, not a separate principle (Edis 2001, 2002).

From an intelligent design perspective, the problem with evolution is not so much the idea that humans and cockroaches share a common ancestor as the notion that evolution is driven by nothing but mindless mechanisms.

Doing so, however, means confronting religious perceptions of our world—perceptions shared by many liberal thinkers as well as the religiously conservative. It means saying we are not here by design, that intelligence is natural, that even creation stories featuring a remote God acting indirectly are likely false and not just unscientific. After all, just about any notion of divine creativity, including those where God does not crudely intervene in the world, relies on some degree of analogy to how our own intelligent designs come about. If intelligence itself can be reduced to chance and necessity, emerging in a bottom-up fashion, how can such an analogy even get started?

No More Ghosts

There is no single theme uniting the beliefs inhabiting the borderlands of science. Tarot readings and Loch Ness monsters do not have a lot in common, aside from being rejected by the scientific mainstream. Nevertheless, it is striking how often fringe beliefs take on a religious coloring, trying to affirm a sense of magic in the world. Denying the paranormal means rejecting the miracle stories generated by religious movements, from the bleeding statues of conservative Catholics to the psychic healings of New Agers.

So critiques of paranormal and fringe science have a part in a wider debate about whether there is any spiritual reality at all. It is not the only strand in this debate; traditional

EXORCISING ALL THE GHOSTS
Continued on page 48

The Roles of Religion, Spirituality, and Genetics in Paranormal Beliefs

Recent studies indicate that people who are spiritual but do not participate in organized religion may have the strongest belief in psychic abilities. Also, emerging research indicates that genetic factors may have a role in spiritual and paranormal beliefs.

JAMES E. KENNEDY

Recent articles by Erich Goode (2000) and Glenn Sparks (2001) discussed the relationship between religious and paranormal beliefs. Goode proposes that they share a common foundation of belief in phenomena that are outside conventional science. Sparks is less certain of a relationship between traditional religion and paranormal beliefs. However, both writers agree that there are multiple dimensions of both religious and paranormal belief and that these dimensions need further investigation.

Recent research may provide insight into the dimensions of, and the relationships among, these beliefs. These findings bring into focus the fundamentally different views of paranormal phenomena found among followers of traditional

religions compared to parapsychological writings, and the importance of distinguishing between religion and spirituality. Recent studies also suggest that genetic factors may have a role in both religious and paranormal beliefs.

Divine Miracles Versus Human Abilities

People with traditional religious beliefs may view psychic phenomena as miracles or divine interventions by God. Popular parapsychological writings, however, view psychic phenomena as widespread (if commonly undeveloped) human abilities. A religious person may believe that divine interventions can occur, but may not believe that people generally have psychic abilities.

Research questionnaires that do not explicitly address this distinction may find inconsistent or misleading results about belief in the paranormal. The results may depend on subtle differences in the wording of the questions and on the context of the surveys.

The data suggest that psychic experiences, belief in the paranormal, and spirituality may be mutually interacting and reinforcing.

These distinctions can be seen in a 1995 representative national survey in Canada.[1] For the question "Do you believe that miraculous healing can sometimes occur?" 74 percent of the respondents answered "Yes, definitely" or "Yes, I think so." Responses to this question were significantly correlated ($r=.39$, $p<.0001$) with a question on how important religion is to the respondent. On the other hand, questions about belief in ESP and that "some people have psychic powers" were both answered yes by 57 percent of the respondents. These beliefs were not significantly correlated with importance of religion.

These results suggest that very different outcomes can be obtained if the phenomena are framed as miracles rather than as human abilities.

Religion Versus Spirituality

The distinction between religion and spirituality is increasingly being recognized as important for research on religion. In a review of several recent studies, Marlar and Hadaway (2002) noted that people who are religious also consider themselves spiritual. However, a smaller group of people consider themselves spiritual but not religious. These people reject participation in organized religion and have a greater interest in direct personal sacred experience.

Belief in paranormal phenomena may be greatest among those who are spiritual but reject organized religion. In an analysis of the Canadian data noted above, Orenstein (2002) reported that belief in the paranormal is positively related to religious belief but negatively related to religious participation. For the respondents who had high religious belief but low church attendance, 78 percent scored high on six paranormal belief questions. For those who had high religious belief and high church attendance, 24 percent scored high on paranormal beliefs. For those who had low religious belief and low church attendance, 11 percent scored high on paranormal beliefs.

These results are consistent with reports on the after-effects of ostensible psychic experiences. Ring (1984) has long claimed that his study of near-death experiences indicated that these experiences strongly inspire a personal spirituality that is independent of institutionalized religion and that de-emphasizes formal religious practices. He also reported cases that suggest that experiences interpreted as ESP or other types of psychic phenomena can have the same effects. Other studies have found that psychic experiences seem to cause increased interest in spirituality (Kennedy and Kanthamani 1995; Palmer 1979).

These findings suggest that psychic experiences, belief in the paranormal, and spirituality may be mutually interacting and reinforcing. One way to examine this hypothesis is to look at the extreme believers and extreme skeptics. The Canadian data were divided into those who answered "Yes, definitely" to all three questions on belief in ESP, psychic powers, and miraculous healing and those who answered "No, definitely not" to the same questions. For the extreme believers, 86 percent indicated that spirituality was very or somewhat important to them.[2] For the extreme skeptics, 38 percent indicated that spirituality was important and 62 percent indicated that spirituality was not important.

Genetics and Belief in the Paranormal

Research on twins separated at birth and human genetics demonstrate that personality characteristics have genetic components (Hamer and Copeland 1998). The long-standing controversy about the origins of human personality suggest that both genetics and environment have important roles. In fact, it is likely that humans have evolved genetically-based personality characteristics that are highly adaptive to environmental conditions (Plotkin 1998).

Research with twins indicates that genetic personality factors include characteristics that are associated with reports of psychic experiences. Absorption, an "openness to experience emotional and cognitive alterations" (Roche and McConkey 1990), is associated with reports of psychic experiences and also

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has a substantial genetic component (Tellegen et al. 1988). Absorption and related traits associated with psychic experiences indicate an ability and willingness to suspend logical thought and externally directed perceptions in favor of internal experience. These traits also appear to reflect a more open exchange of information between conscious and unconscious processes. Given what is now known about the operation of the brain and neurotransmitters, it seems plausible that genetic differences could influence these mental characteristics.

Twin research also indicates a genetic component for interest in spirituality (Kirk et al. 1999) and religion (Bouchard et al. 1999; Waller et al. 1990). Unfortunately the relationship between the genetic components for spirituality and absorption have not yet been investigated.

These findings suggest that interest in spirituality and the paranormal may be very deep-seated. Some of the most intriguing research relates to gender differences.

Photo by Gary Wiepert

Genetic Gender Differences

Women tend to be more spiritual and religious than men. This pattern has been found consistently across cultures, across religions, and throughout history (Stark 2002). Rodney Stark, who has long investigated religion and the paranormal, recently concluded that the gender differences in religiousness are best explained by biological differences. He pointed out the universal finding that males more frequently engage in high-risk behaviors and commit more violent crimes than females, and noted that research with twins and adoptees indicates a genetic component for violent behavior and that other research indicates that high levels of testosterone are associated with impulsive, violent behavior. He argued that the evidence for gender differences in religious faith is almost as universal as for violent behavior and has not been successfully explained by social factors.

Women also tend to believe in psychic phenomena more than men (reviewed in Irwin 1993, also see Orenstein 2002). In the Canadian survey, 72 percent of the extreme skeptics were males and 64 percent of the extreme believers were females.

The tendency for men to be more skeptical may reflect a genetic tendency to be more inclined toward rational, practical thinking and competition whereas women tend to be more interested in people, relationships, and connections. In a study in twenty-five countries, Williams and Best (1986) found that the traits commonly associated with males across cultures include aggressiveness, rationality, enterprise, inventiveness, and resourcefulness. Geary (1998) summarized extensive research showing that from infancy onward, males tend to have more interest in inanimate objects and females more interest in people. In relationships, men have a greater emphasis on competition, power, and dominance, whereas women have relatively more emphasis on altruistic, reciprocal relationships and stable communities (Campbell 2002; Geary 1998).

The emerging evidence indicates that men have evolved characteristics that have adaptive value for competing for resources, developing tools, and producing and providing for descendants. The differences between men and women regarding spirituality and the paranormal may reflect these underlying traits.

It is important to remember that these gender differences occur within the context of genetic diversity. Diversity of genetic traits is an underlying principle of evolution and must be present for natural selection to occur. Many biological mechanisms promote diversity (most notably sexual reproduction). The traits that differ between males and females can be assumed to be similar to the differences in height. Men have a genetic tendency to be taller than women, but, because of diversity, many women are taller than many men. The differences manifest as statistical trends. In addition, human personality and behavior depend on interactions between these genetic factors and environmental conditions, including social forces and previous experiences.

As we have seen, genetic factors appear to have a role in spiritual beliefs, and possibly in paranormal beliefs; these factors may help to explain the widespread and persistent interest in these topics.

Notes

1. The data are from the Project Canada survey directed by Reginald Bibby of the University of Lethbridge. The data and description of the methodology are available through the Web site of the American Religion Archives at the Department of Sociology of Pennsylvania State University. The 1995 survey obtained data from 1,765 people, which was a 64 percent response rate. Weights for community size, gender, and age were applied to make the sample "highly representative of the Canadian population." The 95 percent confidence interval for the weighted data is four percentage points.

2. To evaluate the possibility that the associations with spirituality may be due primarily to the miraculous healing question, the data were examined separately for this question. For those who definitely believed in ESP and psychic powers, 81 percent indicated that spirituality was important. For those who definitely believed in miraculous healing, 87 percent indicated that spirituality was important.

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Development of Beliefs in Paranormal and Supernatural Phenomena

A new study found high levels of fictional paranormal beliefs derived from broadcasts of The X-Files *in viewers who had never watched* The X-Files. *An examination of the origins of paranormal and supernatural beliefs leads to the creation of two models for their development. We are taught such beliefs virtually from infancy. Some are secular, some religious, and some cross over between the two. This synergy of cultural indoctrination has implications for science and skeptics.*

CHRISTOPHER H. WHITTLE

Two important findings emerged from a recent study I conducted on learning scientific information from prime-time television programming (Whittle 2003). The study used an Internet-based survey questionnaire posted to Internet chat groups for three popular television programs, *The X-Files*, *ER*, and *Friends*. Scientific (and pseudoscientific) dialogue from *ER* and *The X-Files* collected in a nine-month-long content analysis created two scales, *ER* science content and *The X-Files* pseudoscience content. Respondents were asked to agree or disagree with statements from each program (such as, "Rene Laennec used a rolled-up newspaper as the first stethoscope" [*ER*], and "The Wanshang Dhole, an Asian dog thought to be extinct, has

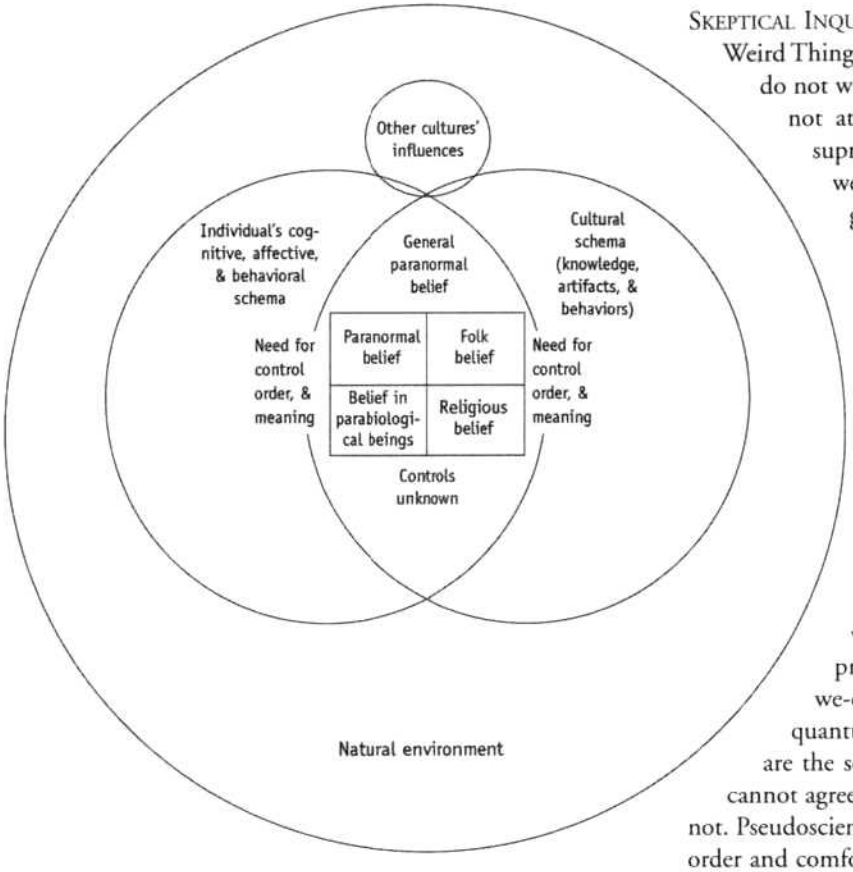

Figure 1. A comprehensive model of general paranormal belief.

pre-evolutionary features including a fifth toe pad, a dew claw, and a prehensile thumb" [*The X-Files*].

My first finding, that *ER* viewers learned specific *ER* science content, is an indicator that entertainment television viewers can learn facts and concepts from their favorite television programs. The second finding was spooky. There was no significant difference in the level of pseudoscientific or paranormal belief between viewers of *ER* and *The X-Files*. This finding does not seem surprising in light of Gallup and Harris polls demonstrating high levels of paranormal belief in the United States, but the beliefs assessed in the study were *fictional* paranormal and pseudoscientific beliefs created by the writers of *The X-Files*. Paranormal researchers ask questions such as, "Do you believe in astral projection, or the leaving of the body by one's spirit?" My research asked, [Do you believe] "[d]uring astral projection, or the leaving of the body for short periods of time, a person could commit a murder?" A homicidal astral projector was the plot of an *X-Files* episode, but *ER* viewers were just as likely to acknowledge belief in that *para*paranormal (a concept beyond the traditional paranormal) belief as were viewers of *The X-Files!*

Perhaps it is as Anderson (1998) pointed out in his SKEPTICAL INQUIRER article "Why Would People *Not* Believe Weird Things," that "almost everything [science] tells us we do not want to hear." We are born of primordial slime, not at the hands of a benevolent and concerned supreme being who lovingly crafted us from clay; we are the result of random mutations and genetic accidents.

Anderson cited quantum mechanics as a realm of science so fantastic as to have supernatural connotations to the average individual. Quantum physicists distinguish virtual particles from real particles, blame the collapse of the wave function on their inability to tell us where the matter of our universe is at any time, and tell us that in parallel universes we may have actually dated the most popular cheerleader or football quarterback in high school, whereas in this mundane universe, we did not. It is all relative. Ghosts are a fairly predictable phenomenon compared to the we-calculated-it-but-you-cannot-sense-it world of quantum physics. Most people will agree that ghosts are the souls of the departed, but quantum physicists cannot agree on where antimatter goes. It is there but it is not. Pseudoscientific and paranormal beliefs provide a sense of order and comfort to those who hold them, giving us control over the unknown. It is not surprising that such beliefs continue to flourish in a world as utterly fantastic as ours.

After researching the paranormal in an effort to discover why *ER* viewers might have the extraordinary paranormal beliefs indicated on their survey questionnaires, I constructed two models of paranormal belief from my research notes (heavily drawn from Goode 2000, Johnston et al. 1995, Irwin 1993, Vikan and Stein 1993, and Tobacyk and Milford 1983). Figure 1 shows the interrelationship between the natural environment, human culture, and the individual. The culture and the individual maintain General Paranormal Beliefs, which consist of at least four relatively independent dimensions: Traditional Religious Belief, Paranormal Belief (psi), Parabiological Beings, and Folk Paranormal Beliefs (superstitions). Individuals have cognitive, affective, and behavioral schema in which these beliefs are organized. Society creates and maintains paranormal beliefs through cultural knowledge, cultural artifacts (including rituals), and expected cultural behaviors. The "Need for control, order, and meaning" domain is speculative on the culture side, but supported by research on the individual side. The demographic correlates of traditional religious paranormal belief and nonreligious paranormal belief (see Rice 2003, Goode 2000, Irwin 1995, and Maller and Lundeen 1933) are highly variable and generally reveal low levels of association. It seems that almost everyone has some level of paranormal belief but scientists find few reliable predictors of these levels. [See "What Does Education *Really* Do?" by Susan Carol Losh, et al., SKEPTICAL INQUIRER, September/October 2003.]

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A first step in future work is to identify the nonbelievers in paranormal phenomena and then explore why they are nonbelievers. Belief in the paranormal begins almost from infancy. We need to expand the research on the developmental stages of belief in the paranormal, and to do that we must study young children.

I have developed a linear model for the development of paranormal and supernatural beliefs at the individual level (figure 2). As children we are taught by parents and other adults (indoctrination by authority) about our culture's beliefs and practices. Our elders' teachings are filtered through hard-wired psychological processes. These include: control (magical) thinking, which allows a helpless infant to believe that he controls the actions of those around him ("Mother fed me because I pointed at her and smiled"), reducing his frustration level; psychological needs and desires, including making order and sense out of one's environment, having an understanding of one's place in the cosmos, feeling in control of one's destiny, and having a fantasy outlet; and the desire to please and imitate adults.

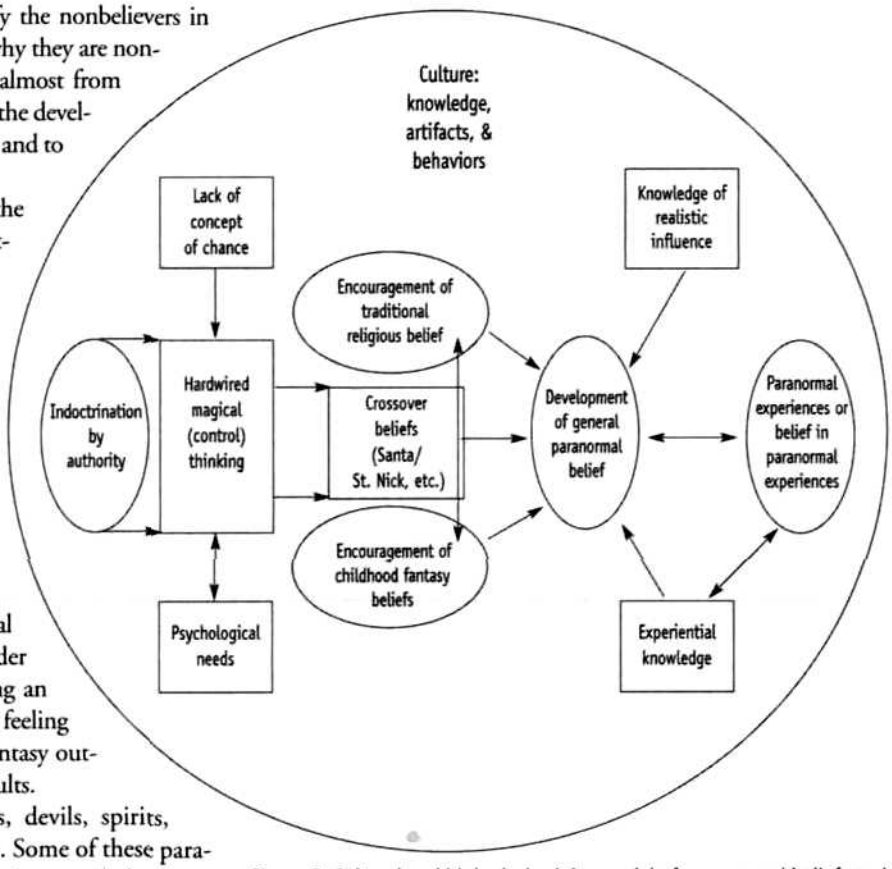
Culture: knowledge, artifacts, & behaviors
Lack of concept of chance
Knowledge of realistic influence
Encouragement of traditional religious belief
Indoctrination by authority
Hardwired magical (control) thinking
Crossover beliefs (Santa/ St. Nick, etc.)
Development of general paranormal belief
Paranormal experiences or belief in paranormal experiences
Encouragement of childhood fantasy beliefs
Psychological needs
Experiential knowledge

Figure 2. Cultural and biological origins model of paranormal beliefs and experiences in the individual.

We are taught about angels, witches, devils, spirits, monsters, gods, etc. virtually in the cradle. Some of these paranormal beliefs are secular, some are religious, and the most pernicious are *crossover beliefs*, beliefs that are at times secular and at other times religious. Santa Claus, angels and vampires, ghosts and souls, and the Easter Bunny are examples of crossover beliefs. Crossover beliefs are attractive to children (free candy and presents), and on that basis they are readily accepted. The devils, ghosts, and monsters are reinforced through Halloween rituals and the mass media. As the child matures, some crossover beliefs, called "teaser" paranormal beliefs, are exposed as false. Traditional religious concepts are reinforced as "true and real." They give us Santa Claus and we believe in an omniscient, beneficent old elf and then they replace Santa with God, who is typically not as generous as Santa Claus and whose disapproval has more serious consequences than a lump of coal. We learn about God and Santa Claus simultaneously; only later are we told that Santa Claus is just a fairy tale and God is real.

In a synergy of cultural indoctrination and the individual's cognitive and affective development, a general belief in the paranormal and the supernatural forms. Once we have knowledge of the paranormal, we can then experience it. One cannot have Bigfoot's baby until one is aware that there is a Bigfoot, or aliens, or ghosts. In other words, you cannot see a ghost until someone has taught you about ghosts. Countervailing influences, experiential knowledge, and knowledge of realistic influence have little effect on paranormal beliefs because they are applied after the belief is established through cultural and familial authority.

The dismal statistics presented on the science literacy level of scientists and science educators by Showers (1993) argued against a rapid increase in science literacy. Scientists and science educators (1) have high levels of paranormal and pseudoscientific belief, (2) do not use their scientific knowledge when voting, (3) use nonscientific approaches in personal and social decision-making, and (4) do not have high levels of science content knowledge outside of their specific disciplines. How can we expect nonscientists to think and act scientifically if scientists and science educators do not? If we decide to mount a concerted program to disabuse the public of paranormal and pseudoscientific beliefs, we must first ask if cultures can survive without paranormal beliefs.

The media may provide fodder for pseudoscientific beliefs and create new monsters and demons for us to believe in, but each individual's culture is responsible for laying the groundwork for pseudoscientific and paranormal belief to take root. We can inform the public through dialogue in entertainment television programming about important scientific facts and concepts. We can inform the public in formal and informal science education environments, but we probably cannot greatly reduce paranormal belief without somehow fulfilling the needs currently fulfilled by it. Science educators must focus on what changes we can make and how to best make those changes. We must involve all stakeholders in the discussion of what is an

Continued on page 55

Religious Beliefs and Their Consequences

A Comparative Perspective

It is the objective consequences of religious beliefs that most interest cultural anthropologists, not the popularly assumed consequences such as salvation, miracles, and answered prayers. These objective consequences, viewed cross-culturally, help to explain faith in supernatural power.

ANTHONY LAYNG

Religious leaders claim all sorts of miraculous consequences of faith, and the faithful readily attribute any welcome happening to the intervention of God, but these "consequences" are more assumed than real. Cultural anthropologists studying traditional religious beliefs and practices in various types of societies also concentrate on the consequences of religious beliefs, but what they document is the objective and observable results of human behavior.

To identify and compare religious beliefs in diverse societies, anthropologists recognize the commonality of such seemingly disparate ideas as sorcery and the divinity of Jesus—that such beliefs imply faith in supernatural power. This includes spiritual beings such as gods, ghosts, and evil

spirits, as well as various unnatural forces including magic, curses, and witchcraft.

When defined as something that entails or presumes supernatural power, religion can be recognized in all cultures, past and present, indicating that such beliefs have played a role in the lives of people for a very long time. Identifying the supernatural dimensions of religious beliefs in tribal and industrial societies avoids any ethnocentric distinction between "true" religion (that which we believe) and superstition (that which we do not believe). And identifying real consequences of religious beliefs suggests that faith in supernatural power may be attributed to something other than the *existence* of supernatural power. The following generalizations illustrate how variable and significant these consequences can be, and help to explain faith in religion.

1) Religious beliefs can foster a sense of understanding and ability to explain, especially where alternative explanations are lacking. Either God's will or the malevolence of a neighboring witch could account for a death in the family. Shamanistic healing and prayer-induced miracles can explain the recovery of sick children. Good luck can be attributed to guardian spirits or angels. Native American origin myths account just as well for Earth's creation as Genesis.

2) Religious beliefs can foster a sense of control over conditions and events, especially where alternative controls are lacking. Just as religious beliefs can offer explanations for occurrences that are otherwise unexplainable, so too can such beliefs convince the faithful that supernatural power can control what, by other means, cannot be controlled. In this regard, witch doctors and priests can offer reassurance that bad circumstances or bad people can be overcome. Rituals that sacrifice to the gods or exorcise demons can give the followers confidence that the future is bound to be better. Talismans, including crucifixes, can be used to ward off evil.

3) Religious beliefs can foster a sense of social unity, especially in opposition to others whose religious beliefs differ. Persecuting witches or merely criticizing nonbelievers (as infidels, heretics, pagans, or gentiles) can unite the faithful. Similarly, participation in communal rituals affirms one's commitment to the religious community. Healing rites conducted by shamans are usually attended by numerous relatives and neighbors whose very presence symbolizes empathy and an ideology of shared fate. Vision quests to seek one's guardian spirit and adult baptism to save one's soul foster close identification with others who have shared those experiences. If a group believes that God has chosen their people, then outsiders are not only unblessed but also very different from that group.

4) Religious beliefs can reinforce traditional values and function as reliable social control mechanisms. Deified ancestors scrutinize their progeny and reward good behavior or punish the wayward. Belief in eternal damnation of the sinful (and heavenly rewards for the virtuous) also encourages moral conformity. Peasants who believe in witches fear to engage in conduct that offends neighbors, because one cannot be certain that vindictive witches are not among them. In such communities, generally admired qualities such as generosity are considered uncharacteristic of witches; demonstrating one's commitment to these admired qualities helps avoid accusations of witchcraft. These and other supernatural sanctions may be especially influential where police and courts are absent.

5) Religious beliefs can challenge the status quo and promote radical social change or a revival of lost traditions. The American Indian Ghost Dance movement promised recently pacified Indians that their dead warriors would return and the whites would leave their rifles and disappear. The Iroquois Longhouse religion, emerging after alcoholism and depression had become prevalent, offered assurance that emulating the Quakers would reclaim sobriety and harmony. Cargo cults on Pacific islands convinced followers to burn their possessions and gardens in order to magically acquire all the new trade goods that were arriving by airplanes and freighters.

When defined as something that entails or presumes supernatural power, religion can be recognized in all cultures, past and present, indicating that such beliefs have played a role in the lives of people for a very long time.

6) Religious beliefs can effectively regulate important material resources, thus aiding the perpetuation of a society. In Bali, a cycle of temple rituals provided a timing system for controlling the flow of water in an expansive and complex irrigation network. In India, cow worship assured the survival of beasts of burden, essential for productive agriculture, even during frequent famines. In eastern Canada, Cree Indians used divination to determine where the next hunting party should go, thus maximizing game replenishment by preventing overuse of hunting territory. And once a year, the otherwise scattered bands of the Cheyenne gathered to conduct a Sun Dance, their most important communal ritual. This assured that a maximum number of hunters assembled at the time of the annual migration of bison, resulting in enough meat to get through the lean winter when game was very scarce.

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7) Religious beliefs can seriously undermine the ability of a society to survive. History provides many examples of societies in crisis spawning millenarian movements that promised some form of paradise after the present world was abandoned or destroyed. The People's Temple in Jonestown, Guyana, the Branch Davidians of Waco, Texas, and the Heaven's Gate cult in California ended abruptly because their leaders advocated group suicide. Mother Ann Lee instructed her followers, the Shakers of New York, to consistently practice *coitus interruptus,* thus ensuring a declining community.

8) Religious beliefs are subject to change and can be altered by invention, acculturation, or neglect. The history of any religion illustrates the nature of cultural change. Numerous religions creatively combine elements from two or more previous unrelated traditions. Under conditions of rapid social transformation, demoralization can encourage abandonment of old religious practices and receptivity to newly created or borrowed beliefs. The early residents of Plains Indian reservations, no longer dependent on bison hunting, abandoned Sun Dances and became receptive to some aspects of Christianity. Today, a revised Sun Dance has been reintroduced on some reservations, providing an opportunity for Native Americans, largely acculturated into Western society, to embrace their Indian heritage.

9) Explaining religious beliefs requires an understanding of the relationship between beliefs and their social and cultural environment. To explain any component of a culture (a myth, a ritual, a custom, etc.), it is essential to know just how it affects and is affected by the rest of that culture. Explaining shared beliefs, religious or otherwise, requires that we examine how those beliefs affect behavior and how that behavior affects the believers. For example, as mentioned above, some beliefs help to foster social unity, regulate scarce resources, or challenge the status quo. Where we fail to recognize such consequences of religious beliefs, we fail to understand their social significance.

10) The objective importance of religious beliefs is the capacity they have for influencing human behavior. It is the observable and measurable results of religious beliefs that most interest social scientists, not the popularly *assumed* consequences such as salvation, miracles, divined truth, and magical cures. Measuring the popularity of a given belief to indicate its influence is unreliable and far less diagnostic than examining the extent to which that belief shapes actual behavior.

The importance of religious beliefs seems most easily identified in tribal societies, where faith in supernatural power has many pragmatic consequences. Where complex technology, centralized government, and formal education are lacking, religious beliefs tend to be highly instrumental and adaptive in directing behavior that ensures a society's survival. □

EXORCISING ALL THE GHOSTS
Continued from page 38

philosophical arguments over the gods usually spend little ink on miracles, preferring armchair expeditions into metaphysical never-never lands. However, especially for those of us who find such metaphysical disputes sterile, questions about the paranormal have a very important part to play in the debate. Enterprises like parapsychology and intelligent design express some deep intuitions about how spiritual realities should touch our lives. Their failure is significant.

None of this means that skeptics of the paranormal must get involved with the more political and ideological aspects of religion. Neither does it mean that the mythical "consistent skeptic" must necessarily deny the gods as well as ghosts. After all, even an important part of the debate over religion is only a part. It does, however, mean that paranormal skepticism weighs in on the side of a scientific naturalism that exorcises all the ghosts from our world.

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Secularization: Europe—Yes, United States—No

Why has secularization occurred in Western Europe but not in the United States? An examination of the theories and research.

PHIL ZUCKERMAN

A major concern for sociologists of religion—and a topic of heated debate—is secularization, the process of religious beliefs, symbols, and institutions becoming less influential and significant in society (Swatos and Olson 2000, Bruce 2002, Stark and Finke 2000, Berger 1967). The idea that religion is steadily dying has enjoyed widespread acceptance over the course of the last three centuries among social scientists, with prominent voices from within sociology, psychology, political science, economics, anthropology, history, and philosophy lending support. This is the gist of the theory: In the wake of the Enlightenment, with the rapid progress of scientific inquiry and industrial development, with emerging insights into the human mind

and body, with the growth of broader and more accessible educational facilities, and amidst the mounting achievements of technology, irrational beliefs and superstitious rituals—the heart and soul of religion—will fade.

What the best available empirical research reveals is that secularization is unambiguously observable in most of Western Europe, but not in the United States. In fact, religion remains remarkably strong in the United States. For instance, more than 95 percent of Americans claim to believe in God or a universal spirit or lifeforce, compared to 61 percent of the British; nearly 80 percent of Americans claim to believe in heaven, compared to 50 percent of the British; 84 percent of Americans believe that Jesus is God or the son of God, compared to 46 percent of the British (Gallup and Lindsay 1999). Comparing additional traditional religious beliefs, over 70 percent of Americans believe in life after death, compared to 46 percent of Italians, 43 percent of the French, and 35 percent of Scandinavians (Gallup 1979). And over 70 percent of Americans believe in hell, compared to only 28 percent of the British (Greeley 1995). Concerning traditional religious participation, nearly 45 percent of Americans attend church more than once a week, compared to 23 percent of Belgians, 19 percent of West Germans, 13 percent of the British, 10 percent of the French, 3 percent of Danes, and only 2 percent of Icelanders (Verweij, Ester, and Nauta 1997).

Interestingly enough, Canada maintains a sort of middle ground between the United States and Western Europe concerning traditional religious belief: In 1995, 70 percent of Canadians claimed to believe in God or a universal spirit, standing between over 90 percent of Americans and 61 percent of Britons; 61 percent of Canadians claim to believe in heaven, standing between 78 percent of Americans and 50 percent Britons (Gallup and Lindsay 1999). Concerning church participation, 30 percent of Canadians attend church weekly (Bruce 1999), standing between 45 percent of Americans, 19 percent of West Germans, and 13 percent of Britons.

The dramatic weakening of religion in Western Europe—in terms of both belief and participation—alongside religion's hearty resilience in the United States is the source of much ongoing speculation, theorizing, and research. Of course, gathering valid statistical data on religious belief and participation is always tricky; subjective meanings, ambiguous terminology, low response rates, and personal reluctance for honesty always hamper survey analyses of religiosity. However, granting the obvious limitations and shortcomings of quantitative analyses, we still must make due with the best data we have, and the picture that data paints is quite revealing.

Secularization in Western Europe

The last time I was in Europe, I was told by two different sets of friends that we would be "going out to the church" for the evening. In both cases (one in Oban, Scotland, and the other in Cologne, Germany) the churches turned out to be religious institutions in façade only; both were former churches that had been gutted and turned into popular pubs and night clubs. Indeed, throughout much of Western Europe—with the unique exception of Ireland—churches are being turned into bars, discos, warehouses, and laundromats. Not only is church attendance way down, but so is religious belief.

Gerald Fried

Consider the following data concerning Western European secularization:

- In Aberdeen, Scotland, in 1851, 60 percent of the adult population attended church; in 1995 that was down to 11 percent (Bruce 1999).
- In 1899, 98 percent of Dutch citizens claimed to belong to a particular church. In 2001, only 40 percent did so (Grotenhuis and Scheepers 2001).
- Only 34 percent of West Germans, 31 percent of Belgians, 24 percent of the British, 17 percent of the French, 11 percent of Finns, and 9 percent of Icelanders attend church at least monthly (Inglehart, Basanez, and Moreno 1998).
- Only 6 percent of Danes, 7 percent of Swedes, and 9 percent of Norwegians attend church at least monthly (Bruce 2000).
- Only 2 percent of Danes, 2 percent of Swedes, and 2 percent of Norwegians attend church on an average Sunday (Bruce 2000).
- 12 percent of Danes claimed to "never attend church" in 1947; that was up to 34 percent in 1996 (Bruce 1999).
- 32 percent of Swedes and 33 percent of Norwegians claim to "never" attend church (Bruce 2000).
- The percent of the population in the United Kingdom in 1900 which had attended Sunday school as children was 55 percent; in 2000 it was down to 4 percent (Bruce 2002).
- Among West Germans in 1967, 42 percent believed that Jesus is the son of God; this dropped down to 29 percent in 1992; among East Germans, the number drops as low as 17 percent (Shand 1998).
- 43 percent of the British in 1940 claimed to believe in the existence of a personal God; that dropped to 26 percent in 2000 (Bruce 2002).

Religious Vitality in the United States

Alexis de Tocqueville was quite familiar with his fellow European Enlightenment thinkers' theory of impending secularization, but while touring the United States in the early nineteenth century, he found that "the facts by no means accord with their theory . . . in America, one of the freest and most enlightened nations in the world, the people fulfill with fervor all the outward duties of religion" (Tocqueville 1835, 308). Tocqueville's characterization of American religiosity remains true to this day. Unlike the many European nations mentioned above, the United States has never had an official government-sponsored, enforced, or directly subsidized religion. Indeed, the separation of church and state—though perpetually and often vigorously challenged—is a hallmark of American democracy. And yet, despite this lack of state-enforced religion (or perhaps *because of*, as some theorists would argue), the United States is, in the words of Robert Fuller (2001, 1), "arguably one of the most religious nations on earth." From the professed faith and church participation of our presidents, to the thriving of Christian media, from Alabama courthouse prayer vigils to Madonna's obsession with the Cabala, secularization is hard to observe in the United States (at least once one steps off college campuses).

Consider the following data concerning American belief and participation:

- Over 95 percent of Americans believe in God or a "higher power," a percentage which has remained unchanged for over fifty years (Gallup and Lindsay 1999).
- 60 percent of Americans describe religion as "very important" in their lives (Gallup and Lindsay 1999).
- 68 percent of American believe in the devil (Kristoff 2003).
- 58 percent of Americans believe that the devil sometimes possesses people on earth (Rice 2003).

Alexis de Tocqueville found that "the facts by no means accord with their theory [of secularization] . . . in America, one of the freest and most enlightened nations in the world, the people fulfill with fervor all the outward duties of religion."

- Between 39 and 46 percent of Americans describe themselves as evangelical or born-again Christians (Kristoff 2003; Gallup and Lindsay 1999).
- Between 63 and 78 percent of Americans believe in heaven (Rice 2003; Gallup and Lindsay 1999).
- 84 percent of Americans believe in the survival of the soul after death (Harris Poll 2003).
- 83 percent of Americans believe that God answers prayers (Rice 2003).
- One third of Americans believe that the Bible is to be taken literally, word for word (Gallup and Lindsay 1999).
- 76 percent of American teenagers believed in the existence of angels in 1992, up from 64 percent in 1978 (Gallup and Lindsay 1999).
- 86 percent of American teenagers believe that Jesus Christ is the son of God (Gallup and Lindsay 1999).
- Nearly 70 percent of Americans are members of a church or synagogue (Gallup and Lindsay 1999).
- A greater proportion of Americans attend church now than at any other time in U.S. history (Finke and Stark 1992).

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Explaining the Differences

"One of the most interesting puzzles in the sociology of religion," observes sociologist Peter Berger, "is why Americans are so much more religious as well as more churchly than Europeans" (Berger 1999, 10). The traditional theory that secularization is some sort of natural, given, or unavoidable consequence of modernity simply doesn't hold up when looking at the United States, a technologically advanced, industrialized, urbanized, relatively democratic society. What is happening (or not happening) on the eastern side of the Atlantic that has so weakened religion in Europe, yet simultaneously keeps religion alive and well on the western side? Like any such question concerning masses of populations, there is no single answer. Surely the relevant differences between the United States and various Western European nations involve an almost endless array of potentially significant variables, and include matters of history, culture, politics, demographics, economics, government, language, war, and education, as well as climate, sports, art, and music. Taking the "middle ground" nation of Canada into account—a country much less religious than the United States and yet not nearly as secular as much of Western Europe—further complicates the puzzle. However, despite the enormous differences and potential variables at play, sociologists of religion argue over a number of possible explanatory theories.

One theory involves the different histories of religious marketing over the last two centuries. Because religion has a long history of state sponsorship in Europe, religious bodies there have perhaps grown lazy. State-supported congregations need not aggressively recruit parishioners to "stay in business." In the United States, however, religions must support themselves and therefore are more aggressive "marketers," going to much greater lengths to attract congregants than their European counterparts. In other words, American religious organizations spend a great deal of time and energy advertising, and their advertising nets results (Stark and Finke 2000).

A second theory involves the ethnic, racial, immigrant, and national diversity that typifies American society. Unlike certain European nations that are made up of relatively homogenous populations (Iceland, for instance), the United States is permeated by an enormous array of different cultural groups, whose members may find solidarity and community in religious involvement (Warner and Wittner 1998; Herberg 1955). For example, W.E.B. Du Bois, the first American sociologist of religion, observed the unparalleled importance of the church to black Americans, noting that, beyond promulgating theology, the black churches provided a social space and communal refuge in an often hostile world (Zuckerman 2002). In sum, it is possible that a significant level of ethnic/cultural/racial heterogeneity, as typified by American society, spurs greater religious participation as people seek a sense of belonging or communal support.

A third consideration involves the possible impact of different social welfare systems. Perhaps when the government takes a greater role in providing social services, religion wanes, and when the government fails to provide extensive social services, religion thrives. For instance, religious belief and participation is the absolute lowest level in Scandinavia, whose countries are characterized by generous social support and extensive welfare systems. In contrast, the United States government offers far fewer social services and welfare programs than any European nation.

A fourth possibility may have to do with differing elementary and secondary educational systems. Perhaps the Europeans have done a better job of conveying rational thinking, scientific methodology, and skeptical inquiry to their children than have American educators.

Of course, numerous additional possibilities abound that could very possibly help explain the differences in secularization/religiosity between Western Europe and the United States, and an adequate summation of them all wouldn't be appropriate here. While we don't know for sure what has caused the religious differences between Western Europe and the United States, the differences are noteworthy and significant, and will surely affect how Europeans and Americans approach and struggle with the oncoming social, political, environmental, and global challenges of the twenty-first century.

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Not Too 'Bright'

Richard Dawkins and Daniel Dennett are smart guys, but their campaign to rename religious unbelievers Brights could use some rethinking.

CHRIS MOONEY

When I first read that leading evolutionary thinkers Richard Dawkins and Daniel Dennett were trying to get the world to stop calling religious unbelievers *atheists* or *agnostics* and start calling them Brights, I had my doubts. Granted, I didn't dispute the basic premise of the Dawkins-Dennett media campaign—announced in *Wired* magazine (Dawkins 2003a), *Free Inquiry* (Dawkins 2003b), and on the *New York Times* op-ed page (Dennett 2003)—namely, that atheists have to put up with a lot of flack in our heavily religious society and that their reputation could use a new shine. As Dawkins noted in *Wired*, a 1999 Gallup poll found that only 49 percent of Americans would vote for an atheist for president. That's a big problem.

But it's not at all clear that this problem can be solved simply by coining a new name (the word Bright was actually introduced by Paul Geisert and Mynga Futrell [Geisert and Futrell 2003], but Dawkins and Dennett have been its most prominent publicists). Moreover, I wasn't convinced that the word Bright would have the positive and uplifting effect that Dawkins and Dennett seemed to expect that it be misconstrued.

Now, a recent attack on the Brights movement in *The Wall Street Journal* by the conservative thinker Dinesh D'Souza confirms my worst fears (D'Souza 2003). The article blithely ignores a key caveat that the Brights defenders have explicitly laid out—namely, that the label isn't meant to suggest that religious doubters are smarter than everyone else. But I actually think this misrepresentation ought to be blamed more on Dennett, Dawkins, and the original founders than on D'Souza—for reasons I will explain.

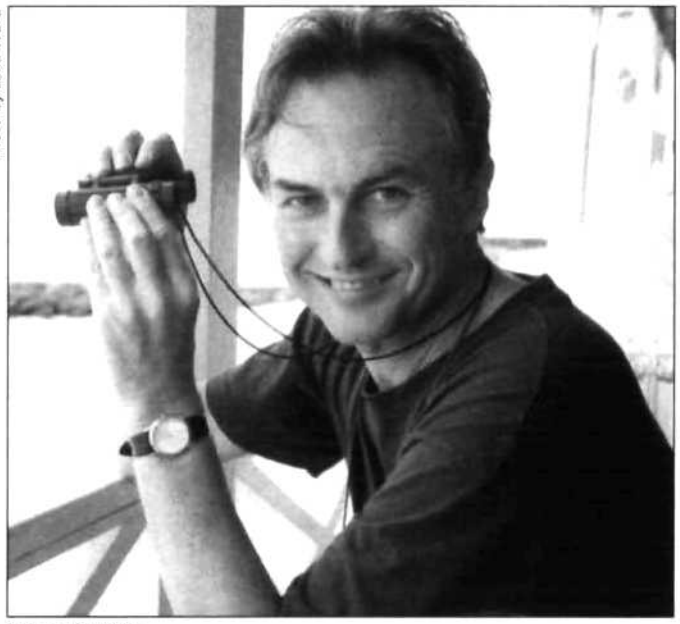
Photo by Lalla Ward

Richard Dawkins

In his original *New York Times* op-ed announcing the Brights label, Dennett wrote, "Don't confuse the noun with the adjective: 'I'm a Bright' is not a boast but a proud avowal of an inquisitive world view." That's certainly nice in principle. But who did Dennett think he was kidding? How could anyone hear the label Bright and think anything but that atheists were claiming to be smarter than everyone else? As ABC News.com commentator John Allen Paulos remarked of the Brights campaign, "I don't think a degree in public relations is needed to expect that many people will construe the term as smug, ridiculous, and arrogant" (Paulos 2003).

From the start, the Brights label reinforced a longstanding stereotype. Atheists already have a terrible rap for being cold-hearted rationalists who attend Mensa gatherings and dismiss religious believers as simple-minded fools. Remember the public outcry that resulted when Jesse Ventura told *Playboy* magazine that he considered organized religion to be "a sham and a crutch for weak-minded people who need strength in numbers" (Ventura 1999)? Given this backdrop of strongly held negative preconceptions about the nonreligious in our heavily religious society, how is renaming atheists as Brights supposed to burnish their image?

Sure enough, in his *Wall Street Journal* reaction to the Brights campaign, D'Souza reverts to the standard anti-atheist stereotype. Dennett's "implication was clear," observes D'Souza. "Brights are the smart people who don't fall for silly superstitions." D'Souza then ventures into some questionable territory, arguing that atheists aren't really so "rational" after all. I disagree: While all people have their foibles, I do think there's at least one obvious sense in which atheists are more "rational" than religious believers. Atheists don't accept supernatural claims on the basis of faith—a practice that cannot, in my opinion, be defended by rational argument. In this sense, at least, atheists do have a leg up in the rationality department (though I'm not sure how much good it does them).

But philosophical points aside, the fact is that D'Souza, writing in the most prominent of conservative outlets, made precisely the attack on the Brights movement that its proponents should have expected from the outset. (Indeed, quite a similar critical approach was taken on NPR by a nonconservative, Steve Waldman of Beliefnet [Waldman 2003].) Given this tactical vulnerability, D'Souza could actually have made a far more devastating criticism of Dawkins and Dennett than the one he makes. After all, if atheists really are so smart, how could two leading atheists—and brilliant evolutionary thinkers—fail to see that the Brights label would be misconstrued?

My guess is that the Brights proponents simply didn't realize that in order to introduce a concept like this, one needs to do polling, message testing, focus groups, the works. You can't just go on ungrounded inspiration. Yet the idea of championing Brights appears to have a very cerebral origin: It's closely tied to the Dawkins-Dennett theory of memetics. In his book *The Selfish Gene* (Dawkins 1976), Dawkins coined the term "meme" to describe an infectious, self-replicating idea or concept. Dennett then jumped on the bandwagon with his book *Darwin's Dangerous Idea* [Dennett 1995]. Now, by promoting the Brights concept in the media, it appears that Dennett and Dawkins think they can start a memetic idea infection and watch it catch on. As one savvy communications expert observed to me by e-mail, "Once you've coined a term like 'meme,' I guess you hanker for that big followup."

But though Dawkins and Dennett may know a lot about evolutionary biology, the packaging and marketing of ideas—what we might call the science of "framing"—might not be their strongest suit. A basic lesson of framing is that you have to avoid promulgating messages that reinforce negative stereotypes, because these stereotypes tend to be too deeply held to

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defeat head-on. I provided a good example of such well-intentioned stereotype reinforcement in an article about framing guru Susan Bales (Mooney 2003):

> Some of the failures of well-intentioned groups to understand the power of frames would be comical if the stakes weren't so high. For instance, teenagers have a terrible reputation among the adult public because of the general perception of endemic teen violence, promiscuity, drug use, and sloth. Thanks in part to the media, which frequently depicts teens in the context of crimes, accidents, or frivolous pursuits, this stereotypical view of adolescents is deeply embedded. . . .
>
> Most young people are not, in fact, out trashing the neighborhood. But how to change public perceptions? In 1997 the National Crime Prevention Council and The Advertising Council ran an ad campaign that proved too clever by half. Titled "Prove Them Wrong By Doing Something Right," the ads sought to inspire teenagers to subvert anti-youth stereotypes by becoming active in opposing crime among their peers. But the advertisements used harsh stereotypes, such as an image of a young skateboarder with his hat on backward and the words "Vandal," "Heroin Addict," and "Purse Snatcher" superimposed over it. Only in smaller print could one read "... all kicked out with the help of kids like me." The problem, Bales and company say, is that once you conjure a powerful and negative stereotypical frame such as troubled teens, you can't just suppress it again.

I think this example runs closely parallel to the Brights/atheists case, and clearly demonstrates the shortcomings of the Brights frame. And it doesn't matter whether Dawkins or Dennett or anyone else actually *is* claiming to be brilliant. Simply by announcing the label, the damage has already been done. When people—most of whom are religious believers—hear that word, the vast majority will likely revert to the stereotypical atheists-as-arrogant frame, which has already been burned into their psyches. That means the Brights label will have failed. In fact, it will have backfired, making the anti-atheist stereotype even harder for future atheists to defeat or dislodge in the future.

What would be a better way to polish the atheist image? I have no studies to point to, but there may be a lesson in this episode. I suspect that what atheists really need is for people to believe that they're likeable, and not so different from everybody else. So perhaps future atheist message crusaders should describe themselves and their brethren as humble, rather than angry or sneering or super-smart. In addition, perhaps atheists should try to confound expectations, associating themselves more with universal human feelings of sympathy, joy, and even vulnerability, rather than cold rationality and relentless inquisitiveness. I'm not sure, but I do know one thing—something that we all learned in high school. The Bright kids aren't always the ones with the most friends, and nobody—nobody—likes a smart ass.

Note

This article was originally published online at www.csicop.org on October 15, 2003. A note about the subsequent reaction that I received concerning it may be illuminating. The article prompted over thirty e-mailed responses, far more than any other csicop.org column, which I've been writing for a year. Of these, virtually all came from skeptics/atheists who wanted to thank me for expressing their own bewilderment about the Brights campaign. This suggests to me that a lot of skeptic/unbeliever folks were feeling leery about the Brights label, and glad to see someone make a strong case against it. As one correspondent memorably put it: "I am a business student and an atheist, and so I look at this from a marketing/advertising perspective. We have done a horrible job of . . . managing our image. The main reason for this, I think, is that the classic generalization of atheists is true. We do tend to be more rational and cold than the average person, because rational cold people are more likely to see through the flaws of religion and be unmoved by the religions' emotional hooks."

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appropriate level of science literacy. To paraphrase Stephen Hawking, then we shall all, science educators, scientists, and just ordinary people, be able to take part in the discussion of why it is that pseudoscientific beliefs exist. If we find the answer to that, it would be the ultimate triumph of human reason—for then we should know the mind of God.

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Point of Honor: On Science and Religion

Religion and science really are profoundly at odds on a variety of dimensions, and science really is, on all those dimensions, far and away the more admirable enterprise.

SUSAN HAACK

> Modern science kills God and takes his place on the vacant throne . . . as . . . the sole arbiter of all relevant truths. [Vaclav Havel][1]

> In the same way that each of us has had to grow up to resist the temptation of wishful thinking . . ., so our species has had to learn in growing up that we are not playing the starring role in any sort of grand cosmic drama. [Steven Weinberg][2]

Havel and Weinberg agree that there is a real tension between religion and science. I believe they are right. Havel, however, thinks that science, pretending to be the sole source of truth, has blinded us to truths of a spiritual kind; while Weinberg thinks that intellectual maturity demands that we give up such wishful thinking about ourselves and our place in the universe, and takes it as

Gerald Fried

a "point of honor" not to seek consolation by adjustment of our beliefs. And here, I believe, Weinberg is right, and Havel wrong.

I say this more than a little diffidently, for the whole topic makes me somewhat queasy—I have, I realize, less the temperament of those village-pump atheists who relish speaking out against religion, than of those more retiring types for whom religious belief just isn't a live option. I have never felt moved to write a manifesto explaining "Why I am not a Christian"; but now I can neither avoid the question of the relation of science to religion, nor duck the obligation to answer it honestly.

Of course, "the" question of the relation of religion and science isn't really one question, but a whole tangle. An initial complication is that religion may be construed quite narrowly, as a commitment to the existence of a personal god or gods interested in human beings' behavior, in our prayers and rituals, or very broadly, as with Einstein's Spinozistic conception of religious feeling as "rapturous amazement at the harmony of natural law."[3] Even with religion narrowly construed, there is the problem of the many competing religions. But I shall cut through these complications by focusing primarily (though not quite exclusively) on Christianity. The most important complication for present purposes is that religion and science differ from each other in a number of interrelated ways: in their conception of the essential character of the universe and our place in it; in the kinds of account they regard as genuinely explanatory; and not only in what they believe, but in how they believe it. This doesn't mean that science and religion are incommensurable, but it does mean that the most illuminating comparisons are neither so easy or so one-dimensional as is sometimes supposed.

Science is not primarily a body of belief, but a federation of kinds of inquiry. Scientific inquiry relies on experience and reasoning: the sciences have developed many ways to extend the senses and enhance our powers of reasoning, but they require no additional kinds of evidential resource beyond these, which are also the resources on which everyday empirical inquiry depends. Among other things, while in even the most ordinary of everyday inquiry we often depend on what others tell us, scientific inquiry has become the joint, ongoing effort of a vast inter-generational community.

The natural sciences seek explanations of natural, and the social sciences of social, phenomena and events. In the natural sciences, the explanations sought are in terms of physical forces and events. In intentional social science, as in history and detective work, the explanations sought are in terms of

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human beings' beliefs, goals, etc., and the actions they prompt. But both natural-scientific and social-scientific explanations are "natural" in the sense that they eschew appeal to any supernatural, otherworldly, spiritual forces.

Imaginative speculation is essential, but imaginative hypotheses have to stand up to evidence. In the scientific enterprise, respect for evidence, intellectual honesty, are prime epistemological (and ethical) virtues. At any time, there are new speculations as yet untried, and many contested issues, controversial claims, and competing theories or theory-fragments; the body of accepted claims and theories is far from complete, and it is fallible. Though much of it is by now firmly established, none is in principle beyond the possibility of revision in the light of new evidence. Parts of the presently accepted scientific account of the origin of the universe and of our place in it are well-warranted, other parts less so; and many, many questions are as yet unresolved. But the main outlines, and many of the details, are pretty well warranted.

I see a nobility in the human capacity to puzzle, dream, calculate, check, and test, to work to find out how things are, to refuse false comfort, to try to find ways to make life better.

According to the best-warranted theories of modern science, the earth is just one small corner of a vast universe, a small corner which happened to be hospitable to life, and in which human beings evolved from earlier life-forms.

Religion, unlike science, is not primarily a kind of inquiry, but a body of belief—"creed" is the word that comes to mind. At the core of a religious world-view, as I shall understand it, is the idea that a purposeful spiritual being brought the universe into existence, and gave human beings a very special place. This spiritual being is concerned about how we humans behave and what we believe, and can be influenced by our prayers and rituals.

Religious belief is supposed to be, not tentative or hedged, but a profound, and profoundly personal, commitment. To disbelieve, or to believe wrongly, is sinful, and faith, i.e., commitment in the absence of compelling evidence, often conceived as a virtue. (This is why we sometimes refer to religious people as "believers.") By contrast, although in their professional capacity scientists accept many propositions as true—some of them very confidently and firmly, and not a few pretty dogmatically—faith, in the religious sense, is alien to the scientific enterprise. (This is why it is sometimes said that belief has no place in science.) Not so incidentally, the different religions do not stand to each other as the different sciences do, but are rivals rather than complementary and interlocking parts of one enterprise.

Unlike religion, theology is a form of inquiry. Unlike scientific inquiry, however, theology welcomes—indeed, it seeks—supernatural explanations, explanations in terms of God's making things so. Usually, furthermore, it calls on evidential resources beyond sensory experience and reasoning, most importantly on religious experience and the authority of revealed texts. So, unlike scientific inquiry, theological inquiry is *dis*continuous with everyday empirical inquiry, both in the kinds of explanations in which it traffics and in the kinds of evidential resource on which it calls.

As I see it, religion and science really are profoundly at odds on all the dimensions I have distinguished; and science really is, on all those dimensions, far and away the more admirable enterprise. (I say "at odds," rather than "incompatible," because the vaguer term is appropriate to all three dimensions of comparison; and for the same reason I say "more admirable," rather than "true" or "better-warranted.") . . .

When Judge Overton ruled in *McLean v. Arkansas Board of Education* (1982) that creationism is not science, he also objected to the creationist claim that belief in a creator and belief in evolution are mutually exclusive, an idea he described as "offensive to the religious views of many." Frank Press, then President of the National Academy of Sciences, wrote in a 1984 NAS pamphlet on *Science and Creation* that it is "false . . . that the theory of evolution represents an irreconcilable conflict between religion and science." But William Provine wrote in response that such "rationalizations are politic but intellectually dishonest." I suspect not so much intellectual dishonesty as a kind of polite reluctance to offend religious believers; as when Paul Gross writes that "there are endless ways in which evolution could have happened in a 'created' world. . . . Scores of evolutionists are Christians. Their pleas are that creationism hurts, rather than helps."[4] But I agree with Provine that the hope of reconciliation is ill-founded.

It is true, of course, that the sciences say nothing about God; and it might seem to follow that there can be no real incompatibility. But this doesn't follow, any more than it follows from the fact that the modern scientific account of combustion doesn't mention phlogiston that it can't be incompatible with the phlogiston theory (or than it follows from the fact that my vote not to make an appointment at this time doesn't list all those whom we should not appoint, that it can't be incompatible with a unanimous vote to appoint X). The kind of theistic evolutionism with which Darwin toyed and which Charles Kingsley accepted disguises, but does not resolve, irreconcilable differences between the scientific and the religious world-pictures. As Darwin came to realize, it fails

to acknowledge the deep tension between the idea of an omnipotent and perfectly benevolent God and the many imperfections and cruelties of nature; as I suggested earlier, it fails to acknowledge the deep tension between a scientific picture of a vast and uncaring universe, and the religious idea of a caring and involved God. As Stephen Hawking once put it, "We are such insignificant creatures on a minor planet of a very average star in the outer suburbs of one of a hundred thousand million galaxies. So it is difficult to believe in a God that would care about us."[5]

In *The Mind of God*, Paul Davies, also a physicist, but a believer (and winner of the million-dollar Templeton Prize "for progress in religion") concludes that "belief in God is largely a matter of taste, to be judged by its explanatory value rather than logical compulsion. Personally I feel more comfortable with a deeper level of explanation than the laws of physics. Whether the use of 'God' for that deeper level is appropriate is, of course, a matter of debate."[6] This, from the idea that explanatoriness is just a matter of taste, through the play on "deeper," to the insouciance about the meaning of "God," sounds to me like—well, a million-dollar muddle. I shall focus instead on a book apparently written in part to counteract the atheistical tendencies of Hawking in physics as well as of Richard Dawkins in biology, in which Richard Swinburne explains that rather than challenging science or postulating a "God of the gaps" to explain what science cannot explain, he postulates God "to explain why science explains." In a late-twentieth-century version of the reformed natural theology envisaged in the 1860s by Baden Powell, Frederick Temple, Henry Ward Beecher, and Henry Drummond, Swinburne offers a kind of theistic foam that will penetrate and solidify in the frame and all the joints of the scientific model.

Treating knowledge as a huge interconnected web, acknowledging that there is a vast and heterogeneous array of evidence to be accommodated, and noting the connections among the concepts of explanation, kinds and laws, Swinburne argues that, by the same criteria for theory-choice that all empirical inquirers use, the hypothesis that there is a God best "explains *everything* . . . the fact that there is a universe at all, that scientific laws operate within it, that it contains conscious animals and humans with very complex intricately organized bodies, . . . that humans report miracles and have religious experiences." The very same criteria that scientists use to reach their theories lead us "to a creator God who sustains everything in existence."[7]

Like myself, Swinburne sees continuities between scientific inquiry and the investigations undertaken by historians and detectives; unlike myself, he adds theologians to the list. But despite his efforts to minimize them, the obvious discontinuities in how theology conceives of explanation, of evidence, and of belief, cannot be disguised. "The simple hypothesis of theism," according to Swinburne, is to explain why there is anything at all—and why there is *so much of it*; why all electrons behave alike; why tigers behave alike; how humans can understand enough of how the world works to find food, keep warm, etc.—in short, "*everything* that we observe." Evidently the (very elastic and ambiguous) concept of simplicity is going to carry quite a burden; for according to Swinburne, whereas in other kinds of inquiry a good explanation must not only be simple but also fit with the rest of our knowledge, the latter requirement does not apply to theological explanations. This suggests that the connection of Swinburne's theological account with the sciences is likely to be tenuous at best.

As, indeed, it is. Apparently Swinburne wouldn't be fazed if there were 57 varieties of tiger, for it doesn't trouble him that there are umpteen varieties of beans, beetles, bacteria, etc. Again, apparently Swinburne wouldn't be fazed if the universe were more orderly than it is, or less, for it doesn't trouble him that quantum mechanics is indeterministic. An understandably exasperated Adolf Grünbaum protests that it apparently doesn't matter at all how the world is; Swinburne would offer the same explanation *whatever* laws scientists discovered.[8]

The most that God's existence is really to explain, apparently, is why there is a universe at all, and why there are kinds and laws. (The contrast with the "God of the gaps" of theistic cosmology begins to blur somewhat.) But Swinburne sidesteps some difficulties by holding that God is not timeless but eternal; and rather than shrugging his shoulders like Jesuit theologian Michael J. Buckley, he does try to explain the nature of divine agency: it is analogous to human agency, except that "as we may need to postulate unobservable planets and atoms to explain phenomena, so we may need to posit non-embodied persons." But intentional human action, as Swinburne acknowledges, involves physical movements; the problem with non-embodied agents is not that they are unobservable, but that they are non-embodied. What is needed is nothing like regular agent causation, and nothing like the operation of unseen bodies; as Grünbaum says, it is *magical* causation. Swinburne likes to speculate about God's motives—why He is both self-revealing and self-concealing, why He sustains the laws of nature but occasionally miraculously suspends them, etc.; but no amount of such speculation can overcome the essential difficulty.

Swinburne treats religious experience as the operation of a kind of sixth sense, analogous to sight and hearing. Defining religious experiences very weakly, as "experiences which seem to the subject to be experiences of God," he relies on "the principle of credulity," that we ought to believe that things are as they seem unless and until we have evidence that we are mistaken, to bridge the gap between religious experience in his non-committal sense and (as I shall say) Religious Experience in the sense of genuine interaction with God. Swinburne grants that not everyone has religious experiences, though "millions of people" do; but some people are color-blind, too. Some of those who have religious experiences have ingested drugs, or subjected themselves to such disciplines as fasting; but it could be that drugs or fasting open people's eyes to God.

Some drugs are known hallucinogens; but most religious experiences are not "made" [*sic*] under the influence of such drugs. Almost all those who have religious experiences have previously been exposed to religious belief (actually, given Swinburne's definition of religious experience, the "almost" is surprising); but only those who already know what a telephone is report seeing what seems to be a telephone, too.

But Religious Experience would be quite unlike sight or hearing insofar as it involves interaction with something non-embodied. In fact, there are far more important differences than similarities. Virtually everyone who learns the word "telephone" does so in the first instance by hearing it used in the visible or audible presence of telephones, whereas no one learns the word "God" ostensively. Virtually everyone who is shown what a telephone is and is subsequently in the presence of a telephone sees it, whereas by no means all of those told about God subsequently report "sensing" him. The vast majority of people can see colors; and we understand the physiological defect that causes color blindness. Most people, however, don't "sense" God; and we also understand that exhaustion, starvation, drugs, suggestion, etc., can cause illusions and delusions.

For most people, if religious experience is to warrant belief in God, it will have to be other peoples' religious experience. Many of us have to rely on the assurances of others that they have seen black swans; but in the case of religious experience, most of us will have to rely on a relatively few others who claim to have had experiences of a kind radically different from any that we—the unprivileged majority—have ever had. What do we have to go on?

Religious experience, in Swinburne's weak sense of the phrase, is a real phenomenon, all right, but a very complex one: not only because, for just about every religion, there are people who claim to have had experiences which authenticate it, but also because "religious experience" covers everything from actual voices and visions, through every kind of illusion and self-deception, to the vaguest sense of edification, of being taken out of oneself. Michael Shermer describes Martin Luther's report of waking suddenly to find Satan disputing with him; and provides photographs of the appearance of the Virgin Mary at the Ugly Duckling car rental firm in Clearwater, Florida—an image on the show-room window produced when oil from palm trees was sprayed on the window by water sprinklers—and of the sad people who showed up in wheelchairs and leaning on canes, hoping for a miracle.

Recent work in neurophysiology has begun to investigate what happens in the brain during religious experiences. One conjecture is that religious experiences are evoked by electrical disturbances in the temporal lobes, which can be triggered by anxiety, lack of oxygen, low blood sugar, or fatigue. In and of itself, of course, such a neurophysiological story cannot tell us whether the sense of being in contact with some higher being is an artifact of brain activity, or a bona fide interaction with God. But if Swinburne's "Principle of Credulity" is not to degenerate into a Principle of Credulousness, we would need, at the least, to be told how to distinguish the genuine article, Religious Experience, from other experiences mistakenly taken for interactions with God, and what evidence there is that some religious experiences are genuine.

In what seems to be an allusion to the Bayesian arguments on which he had relied in an earlier book, Swinburne argues that when evidence of religious experience and miracles is taken into account along with the fact that there is a universe at all, that there are kinds and laws in the universe, etc., it "tops up" the probability that God exists sufficiently to justify belief. He never suggests, in the manner of a priori theology, that God's existence is certain; but the reason he gives for not expecting certainty is quintessentially theological: "If God's existence, justice and intentions became items of common knowledge, then man's freedom to choose [to believe or disbelieve] would in effect be vastly curtailed."[9] Also quintessentially theological is the idea that once the probability of God's existence is high enough (51%? 65%? 77%?), the appropriate response is not tentative acceptance pending further investigation, but "an unlimited commitment." It is as I said earlier: the differences between religion and science extend not only to what is believed, but also to how it is believed.

Contrary to his intent, Swinburne's book highlights not only the differences between scientific and theological inquiry, but more importantly the discontinuities between theological inquiry and our everyday empirical investigations. Whereas the sciences have amplified and refined the evidential resources on which we all rely daily, theology relies on additional evidential resources the authenticity of which depends on dubious old crossword entries—rather as if a whole new kind of inquiry had sprung from the phlogiston theory, and somehow survived its demise as an account of combustion.

In an encyclical of 1950, Pope Pius XII had written that "[s]ome imprudently and indiscreetly hold that evolution . . . explains the origin of all things"; "[c]ommunists," he continued, "gladly subscribe to this opinion." The theory of evolution should not be accepted as proven, and "the Catholic faith obliges us to hold that souls are immediately created by God." But he conceded the possibility of "research and discussion" between scientists and theologians on the evolution of the human body. In a 1996 address entitled "Truth Cannot Contradict Truth," Pope John Paul II acknowledged that "new knowledge has led to the recognition of the theory of evolution as more than a hypothesis." He maintained, however, as Alfred Russel Wallace had done much earlier, that "if the human body takes its origin from pre-existent living matter, the spiritual soul is immediately created by God."[10]

Recently, claiming Pius XII and John Paul II as allies, Stephen Jay Gould has also maintained that science and religion have distinct and non-overlapping domains or "magisteria" (hence his acronym "NOMA").[11] Each domain of inquiry "frames its own rules and admissible questions, and sets its own criteria for judgment and resolution." The role of religion

is not to fill gaps in the scientific picture, but to answer its own distinctive questions. But Gould's view is not, as Pope John Paul's is, that science is concerned with the natural world, and religion with the human soul, with spiritual matters; rather, he takes science to be concerned with the realm of fact and religion with the realm of values, with meaning and morals—something like Andrew Dickson White, who, however, was far more candid about the long history of bitter conflict between religion and science than he; and something like Einstein, who, however, had made it clear that he conceived of the religious attitude simply as an aspiration to "superpersonal" values, such as knowledge of the truth.

Gould's position may seem attractively irenic; but its appeal derives from its vagueness and ambiguity, and evanesces under closer scrutiny. Setting aside the objection that religions often make quite specific historical/factual claims, and postponing the question, whether science has anything to tell us about values, I want to focus for the moment on the thesis that the magisterium of religion is the realm of values. I don't suppose Gould thinks religion concerns itself with aesthetic or epistemic values. Nor does it seem helpful to construe his talk of "meaning and morals" as gesturing towards the way religious people sometimes invest events which from a scientific point of view are mere accidents, coincidences, with a deeper significance. Why was *my* cow struck by lightning, and not yours? Or—a real example, this, from a disturbing television program in the aftermath of Hurricane Andrew—why did the hurricane destroy *their* church, but leave ours untouched? This would reduce religion to a kind of vulgar superstition; which I don't believe is Gould's intent.

But Gould *has* kidnapped the term "religion," and put it to a quite non-standard use. This is most explicitly confirmed when, observing that Thomas Huxley rejected the Christian doctrine that a belief in resurrection serves as a necessary prod for decent behavior during our earthly life, "on a higher principle he regards as essentially religious in nature," Gould tells us that he will construe as fundamentally religious "all moral discourse on principles that might activate the idea of universal fellowship among people."

Huxley would not have been pleased to be co-opted along with Popes Pius and John Paul; for, though he imagined a kind of secular "religion" that might meet some of the same emotional needs without untenable theistic doctrine, he seems to have thought of the relation of religious belief and the scientific world-picture much as I do. Our ancestors believed that "the earth is the centre of the visible universe, [and] man the cynosure of things terrestrial"; and that "the course of nature . . . could be altered by the agency of . . . spiritual beings," he wrote; but by his time, "[i]t is very certain that the earth is not the chief body in the material universe, and that the world is not subordinated to man's use. It is even more certain that nature is the expression of a definite order with which nothing interferes."[12]

In any case, Gould's conception of religion is both too narrow and too broad, for morals are neither the only concern of religion nor the concern only of religion. Set aside the problem that a moral code that distinguishes Jew or Mormon from Gentile is certainly religious, even though positively discouraging to "the idea of universal fellowship among people." Gould's account of religious discourse is clearly too narrow in another way as well: religions have at their core a body of doctrine about God, or the gods, and their relations with human beings and role in their fate. Moral precepts usually follow, or are appended, the point generally being that following this code will please God, or appease the gods; they may even come to occupy a central place in religious discourse of an uplifting rather than theological style. But they are not the heart of the matter. At the same time, Gould's account of religious discourse is also too broad: not only the religious, but also agnostics and atheists, acknowledge moral constraints. Not only religious belief, furthermore, but many other things—family, personal relationships, love of music or of animals, commitment to humanitarian goals, etc., etc.—can give meaning to life.[13] In short, Gould is guilty of the confusion for which H.L. Mencken criticized Alfred North Whitehead, of "the religious impulse [with] common decency."[14]

Wondering why "various alarmed and conciliatory scientists"—he mentions Robert Millikan and Arthur Eddington—were so anxious to reconcile science and religion, Mencken suggested two motives: a kind of cowardice, a disinclination to provoke unscrupulous antagonists too far; and inner doubts, an inability entirely to throw off the pieties in which they were brought up. More recently, Dawkins writes in exasperation of "a cowardly flabbiness of the intellect."[15] I shan't speculate about Gould's motives, but I will repeat that in my opinion the reconciliation he proposes works only by stripping religion of its essential content.

Still, even if it isn't true, isn't religious belief a Noble Lie, perhaps even a necessary one? Aren't "its dreadful threats and solemn sanctions . . . needed [in Mencken's phrase] to keep frail mankind in order"? Weinberg, reminding us of the long and gory history of "crusades, pogroms, and jihads," writes that "on balance the moral influence of religion has been awful."[16] Drawing up a balance sheet doesn't strike me as easy; but at the very least it is far from obvious that the bottom line would leave religions, morally speaking, in the black.

On the positive side, one might put the psychological comfort religion offers to believers; the social solidarity religions encourage, and their contributions to social reform; the extraordinary heritage of religious poetry, art, and music; and—doubtless this is part of what Havel had in mind—the usefulness of religion as a bulwark against the excesses of godless communist regimes.

But a too-easy confidence that religion is reliably an influence for the good is fostered by our tendency to select the moral precepts of which we approve, and ignore the rest. A correspondent points out in the *Wall Street Journal* that you

can find in the Old Testament not only the proscription against homosexuality cited in an article earlier in the week, but also proscriptions against touching the skin of a pig, against eating shrimp, and, in the "exquisitely numbered" Leviticus 20:20, against allowing people with imperfect eyesight to approach the altar.[17] Many religious prescriptions and proscriptions are morally objectionable, even barbaric: the Hindu practice of suttee, the ritual suicide of a widow on her husband's funeral pyre; the prescription in Islamic law of amputation of a thief's right hand; death by stoning as the Old Testament punishment for adulteresses. True, I have chosen somewhat melodramatic examples; but there are plenty of others, less melodramatic but equally apropos—especially, perhaps, in the realm of sexual morality.

Theological responses to the problem of evil can be downright scary. Here is Swinburne: "I am fortunate if the natural possibility of my suffering if you choose to hurt me is the vehicle that makes your choice really matter . . . my good fortune is that the suffering is not . . . pointless." As it happened, the same day I read this I also read an article by a woman who had been raped, sodomized, terrorized, beaten, and left for dead by a gang of thugs.[18] Can you accept that she was benefited by having been the vehicle that made her attackers' choice really matter?—I can't.

And religions have certainly done harm as well as good. The other face of the power of religion to unite people is its power to divide them; and so my list of harms would begin, like Weinberg's, with religious and sectarian wars. It might continue: the Inquisition; the persecution of supposed witches; tyrannical theocratic governments; human sacrifice; the effect of Hindu fatalism in inhibiting social reform; the role of the Dutch Reformed Church in supporting apartheid; etc., etc.

We are selecting among the evidence, again, when we notice the role religious people have sometimes taken in social reform, and forget that not all religious people are reformers, and not all reformers religious. Freeman Dyson stresses the role of religious belief in the suppression of slavery; Weinberg notes that while devout Christians such as William Wilberforce were influential in opposing slavery, plenty of devout Christians supported it, and humanists like Adam Smith and Jeremy Bentham fought against it.

We humans are creatures capable both of great cruelty and of great kindness—both with the help of religion, and without it. Sometimes people are kind and generous, sometimes cruel and heartless, from religious motives; and sometimes people are kind and generous, sometimes cruel and heartless, without the help of religion. . . .

There will be those—doubtless they will be many—who object that what I have said here reveals a narrow, scientistic rationalism. That is seriously untrue, for I have maintained all along that the sciences are not the only legitimate kinds of inquiry, not the only source of truth. But it *is* true that, when Mencken writes, celebrating the triumphs over nature that humankind has achieved through the exercise of its intelligence, "[e]verything that we are we owe to Satan and his bootleg apples," though I pause to note the literal falsity of his words, I am moved by their spirit. I see a nobility in the human capacity to puzzle, dream, calculate, check, and test, to work to find out how things are, to refuse false comfort, to try to find ways to make life better. I make no apology for reserving my greatest admiration for those who (as Mencken puts it) "delight to exercise the mind, no matter which way it takes [them]," as it delights others to exercise their muscles—those for whom doing their damnedest with their mind, no holds barred, is "a point of honor."

Notes

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4. My source for the quotations from Press and Provine is Johnson, Philip E., *Darwin on Trial*, Washington, D.C.: Regnery Gateway, 1992; Downers Grove, IL: InterVarsity Press, 1993. The quotation from Paul Gross comes from his *Politicizing Science Education*, Washington, D.C.: Thomas B. Fordham Foundation, 2000.

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8. Grünbaum, Adolf, "A New Critique of Theological Interpretations of Physical Cosmology," *British Journal for the Philosophy of Science*, 51 (2000): 1–43. All quotations from Grünbaum are from this article.

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10. Pius XI, Pope, "Humani Generis," *Acta Apostolica Sedis* 42 (1950); John Paul II, Pope, "Message on Evolution to the Pontifical Academy of Sciences," *Acta Apostolica Sedis* 88 (1996).

11. Gould, Stephen Jay, *Rocks of Ages: Science and Religion in the Fullness of Life*, New York: Ballantine, 1999. All quotations from Gould are from this book.

12. Huxley, Thomas, "Science and Culture," in Huxley, *"Science and Culture" and Other Essays*, New York: Appleton, 1884; reprinted in Gardner, Martin, *Great Essays in Science*, New York: Pocket Books, 1957.

13. See also my "Worthwhile Lives," *Free Inquiry* 22:1 (Winter 2001–2002): 50–51.

14. Mencken, H.L., *Treatise on the Gods*, New York: Knopf, 1930. All quotations from Mencken are from this book.

15. Dawkins, Richard, "When Religion Steps on Science's Turf," *Free Inquiry*, 18.2 (spring 1998): 18–19.

16. Weinberg, Steven, "A Designer Universe?", *New York Review of Books*, 21 October 1999, 46–48; reprinted in SKEPTICAL INQUIRER 25.5 (September/October 2001). Subsequent quotations from Weinberg are also from this article.

17. Smith, H. Irvin, "Leviticus Contains Many Proscriptions," *Wall Street Journal*, June 20th, 2000.

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Benjamin Franklin's Enlightenment Deism

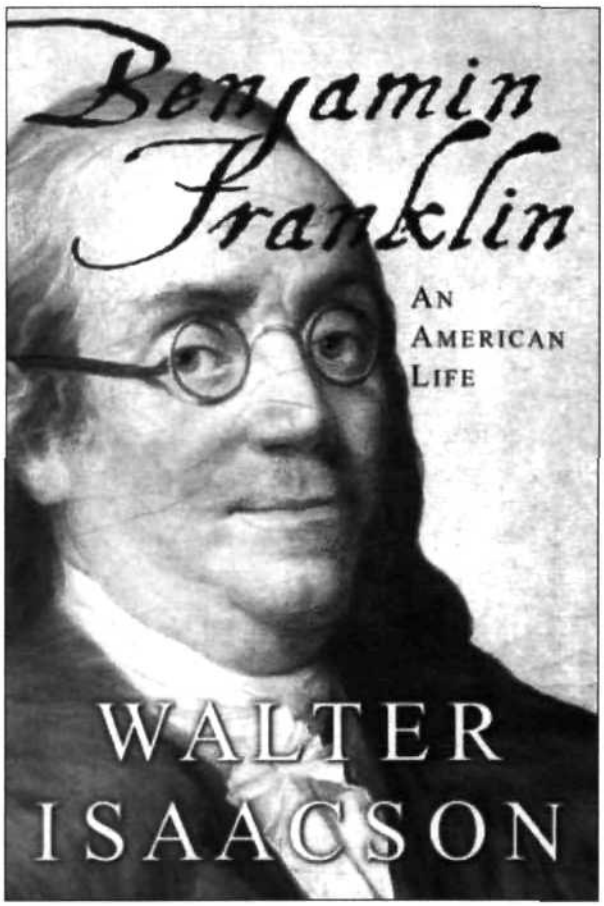
Benjamin Franklin early-on adapted a creed that would last the rest of his life: a virtuous, morally fortified, and pragmatic version of deism. He fit squarely into the tradition—indeed, was the first great American exemplar—of the Enlightenment and its Age of Reason.

WALTER ISAACSON

When we last took Benjamin Franklin's spiritual pulse in London, he had written his ill-conceived "Dissertation on Liberty and Necessity," which attacked the idea of free will and much of Calvinist theology, and then he had repudiated the pamphlet as an embarrassing "erratum." That left him in a religious quandary. He no longer believed in the received dogmas of his Puritan upbringing, which taught that man could achieve salvation only through God's grace rather than through good works. But he was uncomfortable embracing a simple and unenhanced version of deism, the Enlightenment-era creed that reason and the study of nature (instead of divine revelation) tell us all we can know about our Creator. The deists he

knew, including his younger self, had turned out to be squirrely in their morals.

On his return to Philadelphia, Franklin showed little interest in organized religion and even less in attending Sunday services. Still, he continued to hold some basic religious beliefs, among them "the existence of the Deity" and that "the most acceptable service of God was doing good to man." He was tolerant toward all sects, particularly those that worked to make the world a better place, and he made sure "to avoid all discourse that might tend to lessen the good opinion another might have of his own religion." Because he believed that churches were useful to the community, he paid his annual subscription to support the town's Presbyterian minister, the Rev. Jedediah Andrews.



One day, Andrews prevailed on him to sample his Sunday sermons, which Franklin did for five weeks. Unfortunately, he found them "uninteresting and unedifying since not a single moral principle was inculcated or enforced, their aim seeming to be rather to make us good Presbyterians than good citizens." On his final visit, the reading from the Scripture (Philippians 4:8) related to virtue. It was a topic dear to Franklin's heart, and hoped that Andrews would expound on the concept in his sermon. Instead, the minister focused only on dogma and doctrine, without offering any practical thoughts about virtue. Franklin was "disgusted," and he reverted to spending his Sundays reading and writing on his own.

Franklin began to clarify his religious beliefs through a series of essays and letters. In them, he adopted a creed that would last the rest of his life: a virtuous, morally fortified, and pragmatic version of deism. Unlike most pure deists, he concluded that it was useful (and thus probably correct) to believe that a faith in God should inform our daily actions; but like other deists, his faith was devoid of sectarian dogma, burning spirituality, deep soul-searching, or a personal relationship to Christ.

The first of these religious essays was a paper "for my own private use," written in November 1728, entitled "Articles of Belief and Acts of Religion." Unlike his London dissertation, which was clogged with convoluted imitations of analytic philosophy, it was elegant and sparse. He began with a simple affirmation: "I believe there is one Supreme most perfect being."

It was an important statement, because some mushier deists shied even from going that far. As Diderot once quipped, a deist is someone who has not lived long enough to become an atheist. Franklin lived very long, and despite the suspicions of John Adams and others that he was a closet atheist, he repeatedly and indeed increasingly asserted his belief in a supreme God.

In the deist tradition, Franklin's Supreme Being was somewhat distant and uninvolved in our daily travails. "I imagine it great vanity in me to suppose that the Supremely Perfect does in the least regard such an inconsiderable nothing as man," he wrote. He added his belief that this "Infinite Father" was far above wanting our praise or prayers.

There is in all humans, however, a desire and a deeply felt duty to worship a more intimate God, Franklin surmised. Therefore, he wrote, the Supreme Being causes there to be lesser and more personal gods for mortal men to worship. Franklin thus has it both ways: combining the deist concept of God as a distant First Cause with the belief of other religions that worship a God who is directly involved in people's lives. The result is a Supreme Being that can be manifest in various ways, depending on the needs of different worshipers.

Some commentators, most notably A. Owen Aldridge, read this literally as Franklin's embracing some sort of polytheism, with a bevy of lesser gods overseeing various realms and planets. Occasionally throughout his life, Franklin would refer to "the gods," but these later references are quite casual and colloquial, and Franklin seems to be speaking more figuratively than literally in his 1728 paper. As Kerry Walters writes in *Benjamin Franklin and His Gods*, "It is an error to presume they point to a literal polytheism. Such a conclusion is as philosophically bizarre as it is textually unwarranted." (Given the difficulties Franklin sometimes seems to have in believing in one God, it

Walter Isaacson, the president of the Aspen Institute, has been the chairman of CNN and the managing editor of Time *magazine. This article is reprinted courtesy of the author from his biography* Benjamin Franklin: An American Life *(Simon & Schuster, 2003).*

seems unlikely he could find himself believing in many.)

Franklin went on to outline how he viewed and worshiped his own personal God. This involved offering suitable prayers, and Franklin produced a whole liturgy that he had composed. It also required acting virtuously, and Franklin engaged in a moral calculus that was very pragmatic and even somewhat utilitarian: "I believe He is pleased and delights in the happiness of those He has created; and since without virtue man can have no happiness in this world, I firmly believe He delights to see me virtuous."

In a paper he subsequently read to his friends in the Junto, Franklin elaborated his religious beliefs by exploring the issue of "divine providence," the extent to which God gets involved in worldly matters. The Puritans believed in a detailed and intimate involvement, called "special providence," and regularly prayed to God for very specific intercessions. As Calvin himself put it, "Supposing that He remains tranquilly in heaven without caring for the world outrageously deprives God of all effective power." Most deists, on the other hand, believed in a "general providence," in which God expresses his will through the laws of nature he set in motion instead of by micro-managing our daily lives.

As was typical, Franklin sought a pragmatic resolution in his Junto talk, which he called "On the Providence of God in the Government of the World." He began by apologizing to "my intimate pot companions" for being rather "unqualified" to speak on spiritual matters. His study of nature, he said, convinced him that God created the universe and was infinitely wise, good, and powerful. He then explored four possibilities: (1) God predetermined and predestined everything that happens, eliminating all possibility of free will; (2) He left things to proceed according to natural laws and the free will of His creatures, and never interferes; (3) He predestined some things and left somethings to free will, but still never interferes; (4) "He sometimes interferes by His particular providence and sets aside the effects which would otherwise have been produced by any of the above causes."

Franklin ended up settling on the fourth option, but not because he could prove it; instead, it resulted from a process of elimination and a sense of which belief would be most useful for people to hold. Any of the first three options would mean that God is not infinitely powerful or good or wise. "We are then necessarily driven into the fourth supposition," he wrote. He admitted that many find it contradictory to believe both that God is infinitely powerful and that men have free will (it was the conundrum that stymied him in the London dissertation he wrote and then renounced). But if God is indeed all powerful, Franklin reasoned, he surely is able to find a way to give the creatures he made in his image some of his free will.

Franklin's conclusion had, as might be expected, practical consequences: people should love God and "pray to Him for His favor and protection." He did not, however, stray too far from deism; he placed little faith in the use of prayers for specific personal requests or miracles. In an irreverent letter he later wrote to his brother John, he calculated that 45 million prayers were offered in all of New England seeking victory over a fortified French garrison in Canada. "If you do not succeed, I fear I shall have but an indifferent opinion of Presbyterian prayers in such cases as long as I live. Indeed, in attacking strong towns I should have more dependence on *works* than on *faith*."

Above all, Franklin's beliefs were driven by pragmatism. The final sentence of his Junto talk stressed that it was socially useful for people to believe in the version of divine providence and free will that he proposed: "This religion will be a powerful regulator of our actions, give us peace and tranquility within our own minds, and render us benevolent, useful and beneficial to others."

Not all of Franklin's religious musings were this earnest. Around the time of his Junto paper, he wrote for his newspaper a tale called "A Witch Trial at Mount Holly," which was a delightful parody of Puritan mystical beliefs clashing with scientific experimentation. The accused witches were to be subjected to two tests: weighed on a scale against the Bible, and tossed in the river with hands and feet bound to see if they floated. They agree to submit to these tests—on the condition that two of the accusers take the same test. With colorful details of all the ridiculous pomp, Franklin described the process. The accused and accusers all succeed in outweighing the Bible. But both of the accused and one of the accusers fail to sink in the river, thus indicating that they are witches. The more intelligent spectators conclude from this that most people naturally float. The others are not so sure, and they resolve to wait until summer when the experiment could be tried with the subjects unclothed.

Franklin's freethinking unnerved his family. When his parents wrote of their concern over his "erroneous opinions," Franklin replied with a letter that spelled out a religious philosophy, based on tolerance and utility, that would last his life. It would be vain, he wrote, for any person to insist that "all the

doctrines he holds are true and all he rejects are false." The same could be said of the opinions of different religions as well. They should be evaluated, the young pragmatist said, by their utility: "I think opinions should be judged by their influences and effects; and if a man holds none that tend to make him less virtuous or more vicious, it may be concluded that he holds none that are dangerous, which I hope is the case with me." He had little use for the doctrinal distinctions his mother worried about. "I think vital religion has always suffered when orthodoxy is more regarded than virtue. And the Scripture assures me that at the last day we shall not be examined by what we *thought*, but what we *did* . . . that we did good to our fellow creatures. See Matth 26." His parents, a bit more versed in the Scripture, probably caught that he meant Matthew 25. They did, nonetheless, eventually stop worrying about his heresies.

The Moral Perfection Project

Franklin's historical reputation has been largely shaped, for disciples and detractors alike, by his account in his autobiography of the famous project he launched to attain "moral perfection." This rather odd endeavor, which involved sequentially practicing a list of virtues, seems at once so earnest and mechanical that one cannot help either admiring him or ridiculing him. As the novelist D.H. Lawrence later sneered, "He made himself a list of virtues, which he trotted inside like a gray nag in a paddock."

So it's important to note the hints of irony and self-deprecation in his droll recollection, written when he was 79, of what he wryly dubbed "the bold and arduous project of arriving at moral perfection." His account has touches of the amused-by-his-younger-self tone to be found in the diverting little tales he wrote in France at the same time that he was writing this part of his autobiography. Yet it should also be noted that, as a young man, he seemed to approach his moral perfection program with an endearing sincerity, and even as an old man seemed proud of its worthiness.

Franklin began his quest around the time he ended his unsatisfactory visits to Presbyterian services and started spelling out his own religious creed. The endeavor was typically pragmatic. It contained no abstract philosophizing nor any reference to religious doctrines. As he later noted with pride, it was not merely an exhortation to be virtuous, it was also a practical guide on how to achieve that goal.

First he made a list of twelve virtues he thought desirable, and to each he appended a short definition:

Temperance: Eat not to dullness; drink not to elevation.
Silence: Speak not but what may benefit others or yourself; avoid trifling conversation.
Order: Let all your things have their places; let each part of business have its time.
Resolution: Resolve to perform what you ought; perform without fail what you resolve.
Frugality: Make no expense but to do good to others or yourself; (i.e., waste nothing).
Industry: Lose no time; be always employed in something useful; cut off all unnecessary actions.
Sincerity: Use no hurtful deceit; think innocently and justly, and, if you speak, speak accordingly.
Justice: Wrong none by doing injuries, or omitting the benefits that are your duty.
Moderation: Avoid extremes; forbear resenting injuries so much as you think they deserve.
Cleanliness: Tolerate no uncleanliness in body, clothes, or habitation.
Tranquility: Be not disturbed at trifles, or at accidents common or unavoidable.
Chastity: Rarely use venery but for health or offspring, never to dullness, weakness, or the injury of your own or another's peace or reputation.

A Quaker friend "kindly" informed him that he had left something off: Franklin was often guilty of "pride," the friend said, citing many examples, and could be "overbearing and rather insolent." So Franklin added "humility" to be the thirteenth virtue on his list. "Imitate Jesus and Socrates."

The descriptions, such as the notable lenient one for chastity, were rather revealing. So too was the endeavor itself. It was also, in its passion for self-improvement through diligent resolve, enchantingly American.

Franklin's focus was on traits that could help him succeed in this world, instead of ones that would exalt his soul for the hereafter. "Franklin celebrated a characteristically bourgeois set of virtues," writes social theorist David Brooks. "These are not heroic virtues. They don't fire the imagination or arouse the passions like the aristocratic love of honor. They are not particularly spiritual virtues. But they are practical and they are democratic."

Enlightenment Creed

This plan for pursuing virtue, combined with the religious outlook that he had simultaneously been formulating, laid the foundation for a lifelong creed. It was based on pragmatic humanism and a belief in a benevolent but distant deity who was best served by being benevolent to others. Franklin's ideas never ripened into a profound moral or religious philosophy. He focused on understanding virtue rather than God's grace, and he based his creed on rational utility rather than religious faith.

His outlook contained some vestiges of his Puritan upbringing, most notably an inclination toward frugality, lack of pretense, and a belief that God appreciates those who are industrious. But he detached these concepts from Puritan orthodoxy about the salvation of the elect and from other tenets that he did not consider useful in improving earthly conduct. His life shows, the Yale scholar A. Whitney Griswold has noted, "what Puritan habits detached from Puritan beliefs were capable of achieving."

He was also far less inward-looking than Cotton Mather or other Puritans. Indeed, he poked fun at professions of faith that served little worldly purpose. As A. Owen Aldridge writes, "The Puritans were known for their constant introspection, fretting about sins, real or imaginary, and agonizing about the uncertainty of their salvation. Absolutely none of this soul-searching appears in Franklin. One can scrutinize his work from first page to last without finding a single note of spiritual anxiety."

Likewise, he had little use for the sentimental subjectivity of the Romantic era, with its emphasis on the emotional and inspirational, that began rising in Europe and then America during the later part of his life. As a result, he would be criticized by such Romantic exemplars as Keats, Carlyle, Emerson, Thoreau, Poe, and Melville.

Instead, he fit squarely into the tradition—indeed, was the first great American exemplar—of the Enlightenment and its Age of Reason. That movement, which rose in Europe in the late seventeenth century, was defined by an emphasis on reason and observable experience, a mistrust of religious orthodoxy and traditional authority, and an optimism about education and progress. To this mix, Franklin added elements of his own pragmatism. He was able (as novelist John Updike and historian Henry Steele Commager, among others, have noted) to appreciate the energies inherent in Puritanism and to liberate them from rigid dogma so they could flower in the free-thinking atmosphere of the Enlightenment.

In his writings about religion over the next five decades, Franklin rarely displayed much fervor. This is largely because he felt it was futile to wrestle with theological questions about which he had no empirical evidence and thus no rational basis for forming an opinion. Thunderbolts from heaven were, for him, something to be captured by a kite string and studied.

As a result, he was a prophet of tolerance. Focusing on doctrinal disputes was divisive, he felt, and trying to ascertain divine certainties was beyond our mortal ken. Nor did he think that such endeavors were socially useful. The purpose of religion should be to make men better and to improve society, and any sect or creed that did so was fine with him. Describing his moral improvement project in his autobiography, he wrote "There was in it no mark of any of the distinguishing tenets of any particular sect. I had purposely avoided them; for, being fully persuaded of the utility and excellency of my method, and that it might be serviceable to people in all religions, and intending some time or other to publish it, I would not have any thing in it that should prejudice any one, of any sect, against it."

This simplicity of Franklin's creed meant that it was sneered at by sophisticates and disqualified from inclusion in the canon of profound philosophy. Albert Smyth, who compiled volumes of Franklin's papers in the nineteenth century, proclaimed, "His philosophy never got beyond the homely maxims of worldly prudence." But Franklin freely admitted that his religious and moral views were not based on profound analysis or metaphysical thinking. As he declared to a friend later in life, "The great uncertainty I found in metaphysical reasonings disgusted me, and I quitted that kind of reading and study for others more satisfactory."

What he found more satisfactory—more than metaphysics or poetry or exalted romantic sentiments—was looking at things in a pragmatic and practical way. Did they have beneficial consequences? For him, there was a connection between civic virtue and religious virtue, between serving his fellow man and honoring God. He was unashamed by the simplicity of this creed, as he explained in a sweet letter to his wife. "God is very good to us," he wrote. "Let us. . . show our sense of His goodness to us by continuing to do good to our fellow creatures." □

He was, during his eighty-four-year-long life, America's best scientist, inventor, diplomat, writer, and business strategist, and he was also one of its most practical, though not most profound, political thinkers. He proved by flying a kite that lightning was electricity, and he invented a rod to tame it. He devised bifocal glasses and clean-burning stoves, charts of the Gulf Stream, and theories about the contagious nature of the common cold. He launched various civic improvement schemes, such as a lending library, college, volunteer fire corps, insurance association, and matching grant fund-raiser. He helped invent America's unique style of homespun humor and philosophical pragmatism. In foreign policy, he created an approach that wove together idealism with balance-of-power realism. And in politics, he proposed seminal plans for uniting the colonies and creating a federal model for a national government.

—From *Benjamin Franklin: An American Life*, by Walter Isaacson

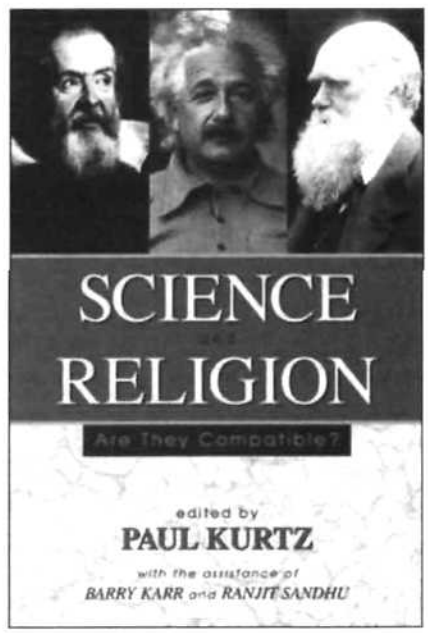
A Timely Collection: 'Thirty-nine Articles' on Science and Religion

Science and Religion: Are They Compatible? Edited by Paul Kurtz with Barry Karr and Ranjit Sandhu. Prometheus Books, New York, 2003. 368 pp. Paperback, $20.

SUSAN HAACK

Many of the thirty-nine papers collected here were presented at the conference on Science and Religion organized by the Center for Inquiry in 2001; most were previously published in SKEPTICAL INQUIRER or *Free Inquiry*. Except for a piece by Taner Edis on science and Islam in contemporary Turkey, they focus on science and Christianity; but they cover a whole range of topics, from cosmology to evolution, from the trial of Galileo to near-death experiences, from the epistemology of science to the ethical dimensions of religion, and from evolutionary explanations of religious belief to pleas for acknowledgment of the Unknowable, or for reverence for the earth.

Shortly before I received the book, the *Wall Street Journal*'s science writer, Sharon Begley, reporting on a conference cosponsored by the Dalai Lama and MIT, commented approvingly that "science and faith are making nice almost everywhere." The week the book arrived, *Newsweek* ran a cover story on "God and Health: Is Religion Good Medicine? Why Science Is Starting to Believe," illustrated by a photograph of a woman in a hospital gown with her hands together in prayer; around the same time, a colleague in the sciences hoped we could get an interdisciplinary group together—we might snag some Templeton money. And



shortly after I began writing this review, *Newsweek*'s cover story was on "Women of the Bible: How Their Stories Speak to Us Today." So this collection is timely, and welcome. Inevitably, though, it includes mixed and weaker pieces as well as the incisive and sparkling; inevitably, also, I can comment on only some of the papers included (no slight is intended to those I couldn't squeeze in).

Observing dryly that there's no point debating with religious believers who claim that the Big Bang theory of a 10-billion-year-old universe "confirms" the Biblical account of creation a few thousand years ago, Sir Hermann Bondi focuses instead on "the contrast in method and outlook between science and religion." In just four refreshingly direct pages, he argues that science best advances when unimpeded by barriers of nationality, race, or ideology, and, though fallible and imperfect, is genuinely universal; whereas the many and various competing religions are "parochial in the extreme." Equally enjoyable is Steven Weinberg's "A Designer Universe?", painstakingly explaining why the supposed evidence of cosmological "fine-tuning" to make the universe hospitable to human life is misleading—and commenting wryly on the free-will response to the problem of evil: "It seems a bit unfair to my relatives to be murdered in order to provide an opportunity for free will for Germans, but even putting that aside, how does free will account for cancer?"

In an excerpt from his *Rocks of Ages*, writing warmly of Pope John Paul's 1996 "Message on Evolution," Stephen Jay Gould promotes his thesis of the supposedly "non-overlapping magisteria" of science and religion, the factual and the ethical. Nicely juxtaposed is Richard Dawkins's brief but telling critique: for all this "obscurantist, disingenuous doublethink," it is just false that religion has special expertise to offer in the domain of

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morals; and religions make many factual as well as ethical claims. Less successful is the juxtaposition of a piece by William Dembski defending Intelligent Design theory— "the latest spiffed-up manifestation" of creationism, in Kendrick Frazier's words—with a reply by Massimo Pigliucci. Dembski spends only a page or so on his criterion of "specified improbability" for detecting design, devoting the remaining seven to criticism of the "materialistic bias" of skepticism and celebration of the rising popularity of ID. Pigliucci struggles with the arguments that Dembski had offered in his book but merely alludes to here; surprisingly, however, he concedes that there *is* design in nature, only not *intelligent* design. But to describe the evolution of the tiger's teeth or the kangaroo's pouch, even metaphorically, as "design," obscures the essential point: there is no need to posit any purposive agent initiating or guiding the process. Since, as *Webster's* dictionary tells us, design must by definition be purposive, "intelligent design" is a pleonasm; what ID really posits is divine, *infallible* design. (So Pigliucci is of course right to stress the "sub-optimality" of biological mechanisms.)

Several papers take on specific factual claims of Christianity: Joe Nickell, for example, reports that in medieval Europe there were at least forty-three "true shrouds," and that carbon-dating and other tests indicate that the shroud of Turin is a fourteenth-century fake. Irwin and Jack Tessman point out that in Randolph Byrd's study supposedly showing that patients in a cardiac care unit received statistically significant benefits from intercessory prayers made without their knowledge, the outcome-assessment stage was not blinded. This is useful stuff; but I wished they'd also asked what kind of arbitrary, malicious God would allow many to fall victim to disease, and then spare some, but not all, of those for whom strangers offered prayers, and fewer, but not none, of the rest.

Quoting Ambrose Bierce's definition of prayer as a request "that the laws of the universe be annulled on behalf of a single petitioner confessedly unworthy," Steven Pinker asks: "[W]hat kind of mind would do something as useless as inventing ghosts and bribing them for good weather?" It's a good question, and there's much in his lively paper to relish; but his answer—we are equipped with "cognitive modules," of object, person, animal, artifact, etc., from which we construct gods by adding or deleting features—is disappointing. Perhaps the concept of "module" has more explanatory power than Pinker indicates here; but as it stands, this sounds like—well, a spiffed-up variant of the old idea that, as David Hume put it, we arrive at the idea of God by "augmenting" our ordinary ideas of power, goodness, etc. (In the course of his useful discussion of possible scientific explanations of subjective religious experience, David Noelle mentions that some brain neurophysiologists dub the localizable parts of the temporal lobe conjectured to be responsible for people's religious responses "the God module." But while this suggests that "module" *may* be more than just a conveniently flexible buzz-word, it seems to make Pinker's explanation not more satisfying, but less.)

Daniel Dennett also has a good question: Why does truth matter? And a pretty good answer, too: In order to survive and reproduce, creatures of every kind need to get the world right enough; and for us humans, with our ability to understand that appearances may be misleading and beliefs false, the goal of truth goes without saying—furthermore, contrary to the postmodernists, in every culture. Dennett's observation that "the warfare at the cutting edge of science draws attention away from the huge uncontested background," and his sketch of the way the sciences have gradually developed intellectual and physical tools for discovering truths about the world, are just right. But I wished he hadn't spent two ambivalent pages first distancing himself from his "good friend Dick Rorty" (who, I might add, has said in print that to call a statement true is just to give it "a rhetorical pat on the back," and that "the only thing exemplary about science is that it is a model of human solidarity"), and then explaining that in conversation Rorty says he is just urging a "vegetarian" understanding of truth. To my mind, those pages would have been much better spent exploring the continuities between inquiry in the sciences and the everyday empirical inquiries out of which the multifarious methods of the sciences have evolved, and thus clarifying the difference between a plausible naturalism that sees experience and reasoning as our only means of finding out how the world is, and an implausible scientism that sees the sciences as the only source of truth.

Paul Kurtz is absolutely tireless, contributing an "Overview" at the beginning and "Afterthoughts" at the end of the volume as well as papers on scientific studies of the paranatural and on evolutionary explanations of religious belief. But I wished he had explicitly distinguished the quasi-logical question, whether science and religion are incompatible, from the historico-sociological question, whether they are in conflict. (Incidentally, none of the several contributors who refer to Andrew Dickson White—presumably including Vern Bullough, who refers to "Andrew Dickinson White"—seems to have noticed that, in the final pages of his two-volume *History of the Warfare of Science and Theology in Christendom*, after meticulously tracing centuries of conflict between science and religion, White had insisted that there is no real incompatibility.) Again, I feared that when Kurtz writes that naturalism wants "to extend science to all areas of human interest," he was eliding naturalism into scientism; and that when he writes that science is compatible with religion conceived minimally as an expression of human hopes and dreams, like White and Gould he risked stripping religion of its core content. And I wished he had given more time to the topic of his final paragraph, the concluding words of the volume: the non-religious concerns, activities, and projects that can make a human life meaningful.

One more thing: in a book covering so many topics from so many angles, I would really have appreciated an index. □

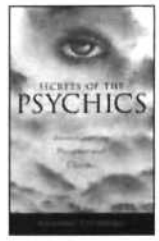
Listing does not preclude future review.

When Science and Christianity Meet. Edited by David C. Lindberg and Ronald L. Numbers. University of Chicago Press, 2003. 368 pp. $29 hardcover. Have science and Christianity been locked in mortal combat for the past 2,000 years? Or has their relationship been one of peaceful coexistence, encouragement, and support? This volume demonstrates that the truth lies somewhere in between. It brings together historians and other scholars who have grown "increasingly uncomfortable with the triumphalist narratives of both the warriors and the harmonizers." They provide historical contexts for the science and religion debate, exploring the key interactions between Christianity and science from the Middle Ages to the twentieth century. In addition to the editors, both historians of science, the authors include Edward Larson, Janet Browne, William B. Ashworth, Jr., Thomas H. Broman, Mott T. Green, David N. Livingstone, G. Blair Nelson, Robert Bruce Mullin, and John H. Roberts.

Mortal Minds: A Biology of the Soul and the Dying Experience. G.M. Woerlee. De Tijdstroom, Utrecht, Netherlands (info@tijdstroom.nl). 2003. 282 pp, hardcover. No price given. An anesthesiologist's study of near-death experiences was stimulated by what he saw as a dearth of adequate explanations as well as proof. In his studies, he learned how changes in the functioning of the body generate these experiences and how these changes reveal a physiological basis underlying not only near-death experiences but many religious beliefs and the nature of death itself. Among the ninteen chapters are "Dreams and Visions," "Disembodied Feelings," "Body, Mind, and Soul," "Dying," "Oxygen Starvation," "Dying Eyes," and "The Experience of Dying." (An article by Dr. Woerlee is planned for the next issue.)

A Physicalist Manifesto: Throughout Modern Materialism. Andrew Melnyk. Cambridge University Press, 2003. 327 pp. $70 hardcover. An associate professor of philosophy (University of Missouri) provides a full treatment of the comprehensive physicalist view that, in some important sense, everything is physical. He says his aim it to persuade philosophers that a doctrine of physicalism can be formulated; that it is unavoidable and significantly reductionistic; that it does not force us to say anything counterintuitive, still less obviously false about what causes what; and that the balance of such empirical evidence clearly favors its truth.

Secrets of the Psychics: Investigating Paranormal Claims. Massimo Polidoro. Prometheus Books, 2003. 302 pp. $26 hardcover. Dedicated to James Randi, with whom he apprenticed. For more than fifteen years, Italian investigator (and now also SI's "Notes on a Strange World" columnist) Massimo Polidoro has been investigating dozens of supposed paranormal events. Most of the write-ups in this book have been collected, cleaned up, and updated from a scattering of journals, magazines, and books published in the U.S. and Europe. The twenty chapters fall into three sections: The Psychology of Psychic Deception, Historical Investigations, and Investigating Psychics Today. An appendix includes Matt Nisbet's fascinating interview with Polidoro, "Introducing Italy's Version of the Great Houdini."



—Kendrick Frazier

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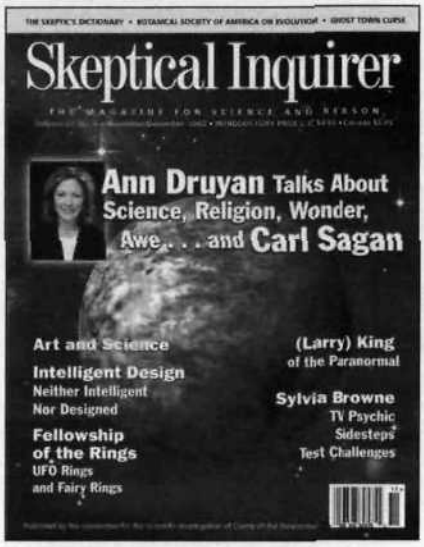
Skeptical Inquirer
Ann Druyan Talks About Science, Religion, Wonder, Awe . . . and Carl Sagan
Art and Science
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Neither Intelligent Nor Designed
Fellowship of the Rings
UFO Rings and Fairy Rings
(Larry) King of the Paranormal
Sylvia Browne
TV Psychic Sidesteps Test Challenges

Ann Druyan on Science, Religion, Wonder, Awe...

Well, I hope you're happy; bringing an old man to tears. Absorbing your publication of Ann Druyan's article ("Ann Druyan Talks about Science, Religion, Wonder, Awe . . . and Carl Sagan," November/December 2003) where every word, every sentence, every celestial thought says what I have been trying to say for eighty years!

Please make reprints available for every human being on this *Pale Blue Dot* to awaken those still stumbling blindly through life, its short tenure devastating as it is.

It's possible you may vaguely recognize how a person can be enthralled, enlightened, and so viciously angry at the same time.

Harold V. Blackman
Montrose, Colorado

Thank you for the article you printed by Ann Druyan. I think she wrote a fabulous piece, and I well liked the many turns of subject matter she took in her discussion. I hope to see more articles presented in your magazine expressing people's ideas and thoughts in such a way.

Thomas Robey
Adamstown, Maryland

Ann Druyan's article should be required reading for every educator, politician, and parent in this country. I know I will be forwarding it to my friends.

Thomas Valenti
Middletown, New Jersey

This letter is with regard to the wonderful piece on science and religion by Ann Druyan.

I am not a scientist and find it difficult to put together the words that can do justice to say how deeply and positively Ms. Druyan's lecture affects me. In support of science, it strikes me that she speaks with her mind *and* her heart. Also, her words about her late husband, Carl Sagan, are so very loving and tender. He was a man to whom it was so moving to listen, not only because of what he said, but also because of his manner in *how* he spoke.

The passion for science, the ongoing development of scientific knowledge and all of the wondrous feelings and questions that go with it must be brought to people in their everyday lives. Ms. Druyan expresses this so very well and your publication is a big step in the right direction.

Cameron Dix
Etobicoke, Ontario
Canada

I have some mild reservations about Ann Druyan's view that mankind and its world are only "specks" in a virtually boundless universe. While such a view is valid in terms of magnitude, I see a small void in her presentation. . . .

While mankind is a mere dot in this mammoth universe, its genetic scheme embodies the entire picture of that "vastness." Otherwise, Carl Sagan couldn't have created the cosmic productions that have immortalized him in the literary and entertainment worlds. . . . Carl Sagan is "billions and billions," though a mere "speck" he may be. I see mankind (with its Carl Sagans) as the intellectual singularity for the whole universe. Mankind's evolution through eons in space-time seems to have a form of sentient awareness in the mindless processes of natural happenings. Ann Druyan—to me, at least—has demonstrated such a capacity in her inspired, poetic prose. And her way of defining the "spiritual" conveys that message clearly to those of us who can share her ineffable feelings.

Jim Comstock
Pattison, Texas

After reading Ann Druyan's article [some thoughts]:

At a time of terror, turmoil, and terminal greed, the thought of a better tomorrow, for most of us, is as fragile as a reed. But man cannot live without hope and therein, perhaps, lies the key to a brighter future. Not hope in the sense that we need it, but hope in the sense that we have it. It is that which all of us have in common that will, I believe, see us through. It matters not what race we are, what gender, what nationality, what social or economic status, what faith we have or haven't, but our common core of humanity that will prevail. Like the reed of hope, we are, on this planet, fragile flowers battered and bruised and tossed about by the wayward winds of fate. None of us know—neither prince nor pauper, saint or sinner—what the future holds. Illness, accidents, ill-begotten whims of nature or man, beset us all. Our very next breath may be our last and no one knows.

We live with fear. We live with courage. We live with happiness and sorrow, expectation and failure, flaming success and brilliant anonymity. It is the game of life we play, some of us better than others. An infant born in a back alley and a prince in a palace have one thing in common, they both took that first breath, and, in the end, it is the same for them, they breathe their last.

I believe, from the depths of my human condition, we need love and peace and truth and justice. The winds of war and madness may blow us off course, set us apart and at each other's throats, but, in the end, the very essence of what we are—goodness and right, decent and caring—will bring us back together. We will be brothers and sisters on this small planet, ready to move on to a better tomorrow.

Bettejo Dux
Kalaheo, Kauai
Hawaii

Ann Druyan writes that she fails to understand how Bruno had the guts to choose to be burned alive. The answer is simple; the alternative was worse. Presumably, Druyan imagines that Bruno would have been

released if he had said the correct words. For all serious cases of heresy, which meant in practice the heretic was a prominent person whom the Inquisition wished to silence, the heretic received a punishment of life imprisonment. This could be severe (*murus strictus*) which meant solitary confinement in chains with a diet of bread and water, or gentle (*murus largus*), Jonathan Sumption (writing about the origins of the Inquisition) comments that this meant that conditions were marginally less atrocious.

In 1592, Bruno was examined and he recanted. Then after eight years of *murus strictus*, he was examined again when he refused to recant. He was fitted with "an iron gag"; this euphemism hides reality. A nail was driven in below his chin to nail his tongue to his palette so that he could be burnt alive in public while being unable to communicate with the spectators.

Jim Ring
Tahunanui, Nelson
New Zealand

I immensely enjoyed the article by Ann Druyan but found myself disappointed when she stated, "So, I don't have any faith, but I have a lot of hope."

As I understand the concept of hope, it is no more than wishful thinking about the future. I have tried to erase the word *hope* from my vocabulary and replace it with words which speak to choices. I think we do much better to show that everyone has choices for that is what moves people to action. You can hope to get rich but only choices about work will bring the desired result. Hope is a feel-good word that gets us nowhere.

Richard Conoboy
Bellingham, Washington

I certainly agree with Ann Druyan on many points.

However, the idea of science as a succession of blows to "humanity's ego" is neither valid nor useful. People driven from paradise by a God who caused them to disobey His commands in order to prove them at His mercy are hardly in a position to be egotistical. . . . God is the center of this universe, even if He supposedly favors some.

Though objectively false, religion and similar non-sciences provide meaningful frameworks for living and guides during crises. Attacking these as infantile and emotionally "sick" doesn't convince people they are wrong but rather that scientists and their ideas are evil. Religious people have counterarguments, not the least being that science doesn't tell anyone how to behave. Most people are neither stupid nor rigid conformists, but simply lack time and inclination for philosophizing and so must rely on "existential shortcuts." It's also well known that most Western values, including those of political and social liberals, have Christian origins.

Combating today's superstitious revival requires consideration, genuine understanding, and tact.

David C. Morrow
Corpus Christi, Texas

In the Eden story as perceived by Ann Druyan, God is a cruel dictator who controls his subjects by keeping them ignorant. But this is not the only possible interpretation of the story.

Eden could be seen as a nursery school for the newly created full-grown infants in which they are protected from the harsh conditions and dangers outside. Expulsion from Eden can then be seen as analogous to graduation. God let them know that they would have to contend with weeds, wild animals, disease, the vagaries of nature that insurance companies call acts of God, diseases, and ultimately death. This is not a curse but the natural order of things. . . .

Stephen Toms
Rising Sun, Maryland

Although I find much to admire in Ann Druyan's essay, her uplifting words are marred by political cheap shots and her apparent assumption that one must belong to a particular party to appreciate science. The left, to which Druyan attaches herself, can boast of excesses just as inimical to science as those of the right.

Take the Soviet Union's fling with Lysenkoism, which was brutally imposed by the Communist regime, who hoped Communist parents would have genetically imprinted little Commie children. Of course, Lysenkoism was shown to be false by Western scientists, but not before an entire generation of Mendelian geneticists had been banished to exile and death in the gulags of Siberia.

Druyan may protest that my example is too far left, but many scientifically embarrassing escapades are associated with the non-Communist left. Examples include the neurotic irrationalities exposed by Sokal's Hoax and Tulane's now-debunked "endocrine disrupter" claims (the alleged disruption of endocrine systems by manmade chemicals). That the left accepted these propositions unquestioningly and resisted their debunking strongly *for purely political reasons* are what I find so disturbing.

It is no accident that various political "isms" have been equated with religion. They're certainly just as dangerous to the promotion of science as religion. Equal treatment of nonsense from *both* ends of the spectrum is the only reasonable way to proceed.

Karen S. Neuhauser
Albuquerque,
New Mexico

Ann Druyan says, "We live in a society now where our leadership is all about promoting superstition, promoting xenophobia." This is not a true statement by any empirical test, if by "all about" she means totally, mainly, or predominately. Perhaps this is just poor wording, but if so, there are numerous other instances of it in this piece. Many political opinions peek from

behind her words (consider the use of "now" in this statement). Politics is not science—let's be careful about confounding the two.

David Thomas
Las Cruces, New Mexico

Ann Druyan replies:

I am very grateful to all who took the time to write, both for your generous expressions of appreciation, which I treasure, and for your constructive disagreement, which I also value. I thank Jim Ring for his scholarly answer to a question that has puzzled me for a long time. I have re-read my piece in search of a basis for Karen S. Neuhauser's letter and can find none. (In fact, Lysenkoism has long been a special interest of mine. I have been at work, on and off, for the last six years, on a project based on one of the untold stories of that great crime.) David Thomas: you are right, it was "poor wording." It's my impression that the phrase "all about" is current usage for the essential characteristic of a thing, as in, "He's all about grand gestures." However, I realize that if taken literally it was open to misinterpretation. I wish I'd chosen my words more carefully.

I'd also like to take this opportunity to thank Ben Radford and Kendrick Frazier of the SKEPTICAL INQUIRER *for helping to turn my talk into an essay and for making it possible for me to present my ideas to such a knowledgeable and thoughtful readership.*

Intelligent Design? Not!

Comment on the article by Bruce and Frances Martin on Intelligent Design (November/December 2003): This admirable article constitutes a most strong argument against Intelligent Design (i.e., creationism). I have paid attention particularly to the following passage: "There are many features of human anatomy we might wish were better designed. . . . The openings of our tubes for breathing and swallowing are so close that we often choke."

The authors have, though, overlooked a more cumbersome design—the lungs. The input and exhaust are through the same tube and opening in a back-and-forth movement of the gases. Would any automobile designer put the exhaust pipe through the carburetor? Why don't we breathe out through an opening, for example, in the chest with a one-way air flow? The driving motor could still be the "bellows" of the lungs. Fortunately our digestive track does not turn back to the mouth (except when vomiting) for expelling the "spent nourishment"!

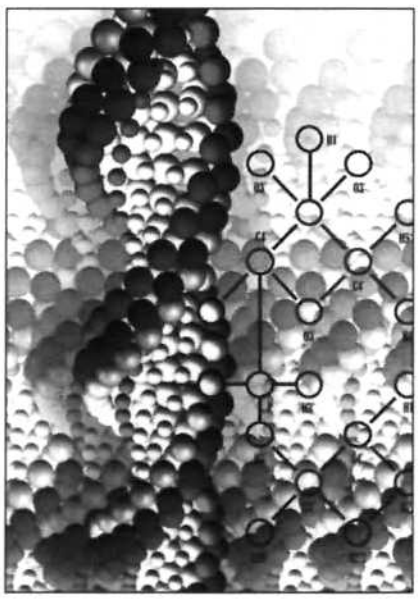
Lassi Hyvärinen
Divonne-les-Bains, France

I read with interest the recent article "Neither Intelligent nor Designed."

When we look at nature and how cruel it presently is, and the real evidence from the past, we pretty much have to accept the notion that if there was a designer, he was a sadistic experimenter that failed 99 percent of the time, not the all-knowing and loving God that we hear of in Sunday School.

I would like to add one more thought, or punch line as I once heard it: When looking at human anatomy, would an intelligent engineer create a situation where a sewer line runs right through the middle of a recreation area?

Cliff Johnson
Chico, California



The article by Bruce and Frances Martin is a cogent refutation of Intelligent Design that should be convincing to those who are receptive to scientific reason. For others, however, there is a different argument that might be more persuasive, since it comes from the Bible. The second chapter of Genesis describes how God "formed every beast of the field, and every fowl of the air" trying to find a helper suitable ("meet" in the King James translation) for Adam. None proved suitable until God came up with Eve. This suggests that creation was not by intelligent design, but by trial and error, or perhaps by random mutation and natural selection.

C. Leon Harris
Professor Emeritus of Biological Sciences
State University of New York at Plattsburgh

I am a second-year biology student at Red Deer College in Alberta and a new subscriber to your publication. I thoroughly enjoy the ongoing articles on the Intelligent Design debate.

During a debate over evolution and creationism in a university biology class my first year I chose to "strongly agree" with the theory of evolution. Our arguments were based on the fact that science has an advantage over religion in that it tries to remain impartial. Even though in practice impartiality is virtually impossible to maintain, I feel that the attempt makes any arguments more plausible. The fact that science works to disprove itself, rather than to follow what it wants to be true also, in my eyes, gives it credibility.

During the debate I also came to realize that to hold so strongly to my scientific beliefs requires its own kind of "faith." Many of the arguments I have are based primarily on scientific theory, rather than scientific fact. I am however prepared to alter my views as our scientific understanding expands and newer or revised theories are developed. This pliability and the search for better explanations are to a large degree what I believe give my argument more credibility.

Even in the academic setting with no given right or wrong opinion, the tension was still apparent. After the class I commented to one of the "strongly disagree" group members that I respected their conviction and ability to take a stand. Although they were not rude, their response was not one that made me feel like an equal; rather the condescending tone merely made it

evident that this debate is still a topic that gets emotions flying and is likely to remain controversial.

Bryce Williams
Red Deer College
Red Deer, Alberta
Canada

The Sin of Scientism?

Are there any Scientisticans?

Massimo Pigliucci ("Thinking About Science," November/December 2003) correctly condemns what he calls "scientism," the view that "science is the only key to solve any problem worth addressing and that—given enough time and resources—science in fact will solve those problems." Explaining that "the essence of science is the application of critical thinking to empirically verifiable questions," surely, he is not suggesting that the application of some kind of uncritical thinking, some kind of illogical thinking, is sometimes preferred.

Of course there are problems that science alone cannot solve. But one element of scientism is that only the application of the canon of critical thinking can provide us with evidential knowledge. He suggests that it is somehow unjustifiable to trust the principle of induction. Of course basing guesses on representative samples may become absolutely useless tomorrow. But then we have chaos, not an alternative way to gain evidential knowledge.

There are questions that cannot be answered by science. But are there questions that can be answered by the application of some canon other than that of critical thinking? I suggest (1) that the canon of scientific reasoning (critical evaluation of evidence) is the only canon that provides evidential knowledge; and (2) that this way of thinking should be used in trying to solve all problems until it is clear that they are not solvable at all. If this is "scientism," then I confess to being a scientistican.

Jim Shelton
Department of Philosophy
and Religion
University of Central Arkansas
Conway, Arkansas

In the long run (say a millennium or two), scientism ("an ideological position implying that science is the only key to solve any problem worth addressing, and that—given enough time and resources—science in fact will solve those problems") will win. The reason this approach drives people crazy at present is that it is based on the premise that the material world is all we have, and thus free will and the soul/spirit/whatever are chimeras.

Part of what humans will have to do over the next few thousand years is get used to this idea and stop trying to argue against it. Statements like "Just because science has been such a successful activity in the past, it simply does not follow that it will continue to be so in the future, or that it will work in any particular case" are examples of magical thinking.

And to be worried about the bad publicity that results from a "scientistic" attitude is to be worried about the message rather than the medium. Pigliucci can accuse scientists of over-enthusiastic arrogance in the premature application of their field to problems that won't be completely solved for centuries, but he does them a serious disservice by implying that the fundamentals are misused.

Arleigh Hartkopf
ahartkopf@ansell.com

If Massimo Pigliucci is urging that arrogance and dogmatism be avoided in science, he's obviously right on.

But in citing as examples of sinful scientism certain explorations by Patricia and Paul Churchland and by E.O. Wilson, he seems to disagree with their conclusions rather than to fault the methods espoused. Wouldn't it be arrogant and dogmatic to assume that their subjects are closed to scientific study? Would Pigliucci offer some other method to investigate, for example, whether human emotions exist?

Phenomena that he mentions were initially considered implausible not because they were new or unusual but because supportive evidence was lacking. It is the scientific method that verified continental drift, for instance, by describing plate tectonics. Claims meriting out-of-hand dismissal are those seeking acceptance without evidentiary backing.

I've no idea whether science can explain everything, whatever "everything" includes. But the overwhelming evidence is that the universe is wholly material and that its phenomena are wholly natural. So whenever the goal is to understand nature, I'd give first crack at the effort to the explanatory and predictive ability of science. If I'm thereby accused of scientism, I gladly plead guilty.

William S. Bunn
Algonac, Michigan

In my mind Pigliucci distorts the meaning of *scientism* by overstating his generalizations. My dictionary defines *scientism* as "the principle that scientific methods can and should be applied in all fields of investigation." I think this differs importantly from Pigliucci's, "Scientism is essentially an ideological position implying that science is the only key to solve any problem worth addressing, and that—given enough time and resources—science in fact will solve those problems."

I, personally, am a *scientismist.* I accept scientism as not only an essential position for me, but also as one all logical, rational, thoughtful nontheists should accept as a working hypothesis. Pigliucci is correct in saying that such a position may turn out to be in error, but there is less likelihood of that being true than the opposite: that there are some fields and investigations that must inherently be excluded from scientific investigation.

My own analysis of why more Americans accept "scientific creationism" than evolution is because science has allowed itself to be controlled by charges of scientism rather than recognizing, as A.J. Ayer says, "There is no field of experience which cannot, in principle, be brought under some form of scientific law, and no type of speculative knowledge about the world which it is, in principle, beyond the power of science to give."

We have allowed our thinking to be controlled by seventeenth-century science philosopher Rene Descartes's position that "meaning" (which the Church equates with the "soul") is the property of the Church and is excluded from the world of science. Although Descartes's approach was politically expedient at the time, it no longer is. Today it restricts science from its necessary development. Therefore, in my opinion

Pigliucci's approach promotes and perpetuates exactly what he wants to end—the rule by folk religions such as Christianity, Judaism, and Islam; especially the fundamentalists of these groups. . . .

Arthur M. Jackson
San Jose, California

I am sure that I am not the only reader of the November/December issue of SKEPTICAL INQUIRER who was surprised and disappointed to see Massimo Pigliucci's tendentious essay in the same issue as the marvelous article by Ann Druyan. While Druyan calls science "a way of looking at absolutely everything," Pigliucci believes that it is a "sin" to imply that "science is the only key to solve any problem worth addressing, and that—given enough time and resources—science in fact will solve those problems."

Though Pigliucci's attack on "scientism" does not provide a detailed blacklist of the research subjects that repentant scientists should avoid in order to remain sinless, there does seem to be something about Patricia and Paul Churchland's neurophilosophy and E.O. Wilson's sociobiology that draws his ire. Perhaps it is their success at pointing out quite probable routes for the future of reductive science—or even the idea of scientific reduction itself.

Ann Druyan credits a "corrupt treaty" between science and religion for the tragic failure of our culture to recognize and celebrate the central revelations of science—"The vastness of the universe, the immensity of time, the relatedness of all life, and life's preciousness on our tiny planet"—as the awe-inspiring triumphs of human understanding that they are. To this list might well be added "the unity of knowledge," for it is this last, and perhaps most important revelation—that the universe as revealed by science is a single piece, and that our knowledge of that universe is subject to reductive unification—that is at issue here. It is the reductive process by which the plural scientific understandings of our world are merged into a singular comprehensive understanding that appears to be the bugaboo of the modern campaign against "scientism". . . .

Norman F. Hall
San Diego, California

Massimo Pigliucci's essay on "scientism" was an absurd waste of space.

The term *scientism* was coined by certain Christian sects so they could cast themselves in the role of victims. A lot of people are, frankly, fed up with the idea that a person's viewpoint is worthy of respect just because it's based on a sincere belief. Religion is never held to account for its errors and its dismal role in human history. Astronomy, medicine, and technology have given more answers and provided greater ease to more people than any religion or "holy man" ever has or ever could.

"Scientism" is considered as actual hostility toward religion and churches. Hostility, yes, but has anybody ever advocated the suppression of religion? Has any scientist ever burned a clergyman at the stake? When has any churchman ever proven a scientific fact that some scientist has dismissed "out of hand?"

To blame the "scientism" of scientists for public ignorance and gullibility is like blaming people having different skin colors for the problem of racism. Odd that the moon landing was mentioned; do you have any idea how many people doubt that such an event really took place?

Interesting comment, that the Churchlands ". . . have faith in the fact . . . if there was, indeed, a fact, no faith would be necessary. . . ."

"Scientism" is a straw man. The only sin is refusing to learn in the face of evidence.

Hal C. Pattee
Utica, New York

Massimo Pigliucci replies:

I must say that I was a bit surprised by the comments that my column on scientism has elicited. Then again, I shouldn't have been, because it is exactly this widespread attitude that brought me to write the column to begin with. In the limited space I have available I will, of course, not be able to address each individual point, but I will focus on a few common themes that I see emerging from the letters.

First, let me unequivocally state that: (a) I do think the universe is made of matter and energy, and I leave no space for mystical or supernatural explanations of anything; (b) I do regard science as our best tool to understand the natural world (after all, I am a scientist by profession precisely for that reason).

However, science does have a "public relations" problem, a problem whose roots are complex and include a widespread sentiment of anti-intellectualism among large portions of the American public. This problem, however, is also exacerbated by the perceived arrogance of some scientists who abandon themselves to facile (and largely unsubstantiated, at least at the moment) grand statements about being on the brink of solving fundamental questions of meaning (as opposed to fact) on behalf of humanity. Some physicists who keep talking about having looked directly into "God's eyes," (e.g., Stephen Hawking), and biologists (e.g., E.O. Wilson) who casually mention that they got a solid handle on morality by studying ants, are first on the list to blame. Let us remember that, since science is funded by the public, worrying about how scientists come across to the public is not only of academic interest.

More importantly, it seems to me that some readers hold an old-fashioned view of reductionism that has long been shown to be inadequate. If by reducing, say, psychology to biology one means that all human mental states are, in fact, a result of how brain circuitry interacts with the external world, of course this is the case. But knowing that, say, falling in love is the result of certain patterns of neural firing and hormone release, tells us very little about who we are going to fall in love with next and why. This is because lower explanatory levels (neurons, hormones) can successfully tell us how certain things at higher levels (behavior) occur, i.e., how those behaviors are made possible by the underlying machinery; but the lower level of analysis often does not tell us what particular occurrences will take place, because there are too many possibilities interacting in too complex ways for a predictive science to be made of it. This is why, for example, even though we know that lions and gazelles are made of quarks, you will not find any reference to quantum mechanics in textbooks on the ecology of savannas. (For more on this interpretation of reductionism see Dupré, J. [1993]. The Disorder of Things: Metaphysical Foundations of the Disunity of Science. *Cambridge, MA, Harvard University Press.)*

Finally, about the Churchlands and their neurobiological reductionism. If one actually reads their papers, one finds that they are not simply claiming that human emotions must

be rooted in biochemistry. That would be a pretty non-controversial statement (unless you happen to be a dualist, of which there are few left among science—and philosophy—professionals). Paul Churchland (e.g., in Churchland, P. [1988], Eliminative Materialism: Matter and Consciousness. *Cambridge, MA, MIT Press: 43–49) goes on to say that humankind would be better off if we dropped talk of love, pain, sadness, and so on, and simply replace them with the technically accurate neurobiological descriptions. Besides the obvious fact that this would make for a very unwieldy language, would humanity really be "better off" if we rewrote Shakespeare using a biological dictionary? Isn't this rather a pretty clear example of how silly one can become if one insists in pushing a good idea (that science is our best tool to tackle questions about nature) too far? As somebody once put it, if your only tool is a hammer, all problems begin to look like nails, a rather restrictive view of the universe.*

BSA Statement on Evolution

Congratulations to the Botanical Society of America for its "Statement on Evolution" (November/December 2003) and kudos to the SKEPTICAL INQUIRER for publishing it. I have never read a clearer or more succinct explanation as to why Intelligent Design cannot compete with evolution as an explanation for the development of species. This article needs to be sent to every state and local board of education in the United States.

Norman R. Remley
Emeritus Professor of Psychology
Texas Christian University
Fort Worth, Texas

Cited Web Site Unreliable

What was an enjoyable and informative article ("The Fellowship of the Rings," November/December 2003) was marred by the first footnote, of all things. The author cites www.crystalinks.com/angelhair.html as a source....Was there not a reliable, scientific source explaining Angel Hair that could have been used?

B. Abbott
Port Coquitlam, British Columbia
Canada

Angel M. Nieves-Rivera replies:

The reason for the Angel Hair citation is to show the concept as it's defined by the UFO believers and not to support their pseudoscientific New Age belief. I was one of those believers until, by scientific reasoning, I came to my own conclusion: it is a misinterpretation or a willful deception. Also, I understand it is not the best source to cite, but since I found no science-based Web site dealing with this pseudoscientific subject, someone who does not know what Angel Hair is needs a definition.

Other Inquiry Methods?

Thank you, Ralph Estling. At last someone recognizes in print something I have thought all along: "All rational thinking is an examination of individual facts with the hope of arriving at a general, useful conclusion. This is called induction" ("Forum," November/December 2003). It is also called science.

John Polkinghorne, a nuclear physicist turned Anglican priest, claims there are many "forms of inquiry" other than science. He only comes up with three: beauty, ethics and morals, and revelation from God, and he gives no examples of knowledge generated by any of these sources.

That's fine. He's trying to make a case for religion and doesn't do a very good job of it. But I was stunned to see this statement by you in your SKEPTICAL INQUIRER twenty-fifth anniversary article a couple of years ago: "Many scientists will say that the methods of science together represent one of the most successful ways, if not the most successful way, humans have ever devised to expand our knowledge of the world." This sounds like a close contest. What, pray tell, are the other ways?...

Can you or your readers offer any method of inquiry at all, other than science, that generates knowledge about our world?

Don Keith
Waterloo, Ontario
Canada

Doyle and Sherlock Holmes

Your latest piece on Houdini, Massimo Polidoro's "Houdini's Final Days" (November/December 2003) reminds me of an old question about Sir Arthur Conan Doyle that I've been curious about for a long time. Given Doyle's apparently strong and sincere belief in spiritualism, I've always thought it strange that his detective, Sherlock Holmes (so far as I know; I haven't read all the stories), never resorted to any paranormal means for solving a crime. That character prided himself on relying solely on empirical evidence and rational deduction, didn't he? Do any of you know? Did Doyle ever resort to spiritualism in any of his mysteries? If not, I wonder why not, since I presume he would have thought it a perfectly normal natural phenomenon.

Steve Chandler
Moscow, Idaho

Massimo Polidoro replies:

Thank you. This has given me an idea for one of my next columns, when I will deal with exactly this problem.

The letters column is a forum for views on matters raised in previous issues. **Letters should be no more than 225 words.** Due to the volume of letters not all can be published. Address letters to Letters to the Editor, SKEPTICAL INQUIRER. Send by mail to 944 Deer Dr. NE, Albuquerque, NM 87122; by fax to 505-828-2080; or by e-mail to letters@csicop.org (include name and address).

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Martian Surface at an Angle
This color "postcard from Mars," taken in January by the panoramic camera on the Mars Exploration Rover Spirit, looks to the north. The apparent slope of the horizon is due to the several-degree tilt of the lander deck. On the left, the circular topographic feature dubbed Sleepy Hollow can be seen along with dark markings that may be surface disturbances caused by the airbag-encased lander as it bounced and rolled to rest. A dust-coated airbag is prominent in the foreground, and a dune-like object that has piqued the interest of the science team with its dark, possibly armored top coating, can be seen on the right.

Image credit: NASA/JPL/Cornell

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